

# RADIOWORLD

Technology & news for radio decision makers

radioworld.com | March 27 2024 | \$5.00

## NAB Show explores new worlds of tech

AI is just one of the trends to watch for in Las Vegas



**Why Xperi is into gaming in the car**  
Joe D'Angelo says it presents a major opportunity for radio.

**EAS, only where needed**  
Partial County Alerting will be featured during the BEITC.

**The value of human talent**  
Jon Accorrino says radio must find the right balance when deploying AI voices.

FUTURE



**Automation has never been more powerful**

Booth #W1743

Revolutionize your DAD workflow with WebDAD and AITrack

Schedule a demo at [enco.com/nab](https://enco.com/nab)

IT'S ALL IN WHEATNET-IP



THE INTELLIGENT NETWORK

# BRING THE STUDIO ANYWHERE

---

## GLASS LXE



Glass LXE is a multi-touch UI that operates as a standalone virtual console into the WheatNet-IP audio network, a complete IP audio ecosystem of consoles, talent stations, I/O units, accessories, and appliances.

Experience the power of Wheatstone's flagship LXE hardware console, now under your fingertips. Glass LXE is a multi-touch screen software interface, featuring familiar buttons, knobs, and multi-touch controls. Set EQ curves, filters, and more, just like you would on the LXE hardware console. Anywhere, anytime—**Glass LXE brings the studio to you.**

**Connect with your Wheatstone sales engineer for all your WheatNet-IP AoIP network needs!**

Call (252) 638-7000 or email [sales@wheatstone.com](mailto:sales@wheatstone.com)

<https://wheatstone.com/glass-lxe-rw-2023d>



[www.wheatstone.com](http://www.wheatstone.com) | Manufactured, shipped and supported from North Carolina, USA



IT'S ALL IN WHEATNET-IP



THE INTELLIGENT NETWORK

# BRING THE STUDIO ANYWHERE

---

## GLASS LXE



Glass LXE is a multi-touch UI that operates as a standalone virtual console into the WheatNet-IP audio network, a complete IP audio ecosystem of consoles, talent stations, I/O units, accessories, and appliances.

Experience the power of Wheatstone's flagship LXE hardware console, now under your fingertips. Glass LXE is a multi-touch screen software interface, featuring familiar buttons, knobs, and multi-touch controls. Set EQ curves, filters, and more, just like you would on the LXE hardware console. Anywhere, anytime—Glass LXE brings the studio to you.

**Connect with your Wheatstone sales engineer for all your WheatNet-IP AoIP network needs!**

Call (252) 638-7000 or email [sales@wheatstone.com](mailto:sales@wheatstone.com)

<https://wheatstone.com/glass-lxe-rw-2023d>



[www.wheatstone.com](http://www.wheatstone.com) | Manufactured, shipped and supported from North Carolina, USA

**FOLLOW US**

www.radioworld.com  
www.facebook.com/RadioWorldMagazine  
www.linkedin.com/company/radioworldmagazine

**CONTENT**

**Managing Director, Content & Editor in Chief** Paul McLane  
paul.mclane@futurenet.com, 845-414-6105

**Assistant Editor & SmartBrief Editor** Jill Adams  
jill.adams@futurenet.com

**Technical Advisors** Wu, CMO Assessment  
Thomas R. McKinley, Doug Gresh

**Contributors:** David Bell, John Byles, Bobyn Bulant, James Carless, Ken DeLuca, Mark Durenberger, Charles Eton, Tommie Hejny, Alan Hirsch, Paul Ivers, Julia Jones, John Langhin, Amy Langford, Matt Lippard, Mike Lippard, Frank Mackey, Tim Paul, Mark Percich, Stephen M. Pardo, James O'Keefe, T. Carter Reed, John Rimmer, Gregg Rial, Dan Roberts, Dennis Sorenson, Randy Suda, Tom Verman, Jennifer Webb, Steve Walker, Chris Wood

**Production Manager** Nickie Schilling  
**Senior Design Director** Paul R. Kintner  
**Senior Art Editor** Will Shum

**ADVERTISING SALES**

**Senior Business Director & Publisher, Radio World**  
John Langy, john.langy@futurenet.com, 815-678-3838

**Publisher, Radio World International**  
Bernard A. Ladd, bern.ladd@futurenet.com  
+30-230-801-1938

**SUBSCRIBER CUSTOMER SERVICE**

To subscribe, change your address, or check on your subscription status, go to [www.radioworld.com](http://www.radioworld.com) and click on "Subscribe," email [future@futurenet.com](mailto:future@futurenet.com), call 888-298-5828, or write P.O. Box 1051, Lowell, MA 01853.

**LICENSING/REPRINTS/PERMISSIONS**

Radio World is available for licensing. Contact the licensing team to inquire about your requirements. Team of Professionals including Rachel Shaw, [rashaw@futurenet.com](mailto:rashaw@futurenet.com)

**MANAGEMENT**

**SVP, MD, B2B** Amanda Dornheim Allen  
**VP, Global Head of Content, B2B** Carme Kirby  
**MD, Content, Broadcast Tech** Paul McLane  
**VP, Global Head of Sales, B2B** James Ivers  
**Managing VP of Sales, B2B Tech** Adam Goldstein  
**VP, Global Head of Strategy & Ops, B2B** Allison Merlett  
**VP, Product & Marketing, B2B** Scott Trovati  
**Head of Production US & UK** Mark Cunningham  
**Head of Design, B2B** Steve Cooper

**FUTURE US, INC.**

Future US LLC, 139 West 42nd Street, 7th Floor, New York, NY 10036



All contents of Future US, Inc. are published under copyright. All rights reserved. No part of this magazine may be reproduced in any form without the prior written permission of the publisher, Future Publishing Limited (company number 02003928). Registered in England and Wales. Registered office: 139 West 42nd Street, The Atlantic, Suite 901, USA. All information contained in this publication is for information only and should not be used as a basis for any legal or financial decisions. Future Publishing Limited is not liable for any loss or damage, including consequential loss or damage, arising from the use of the information contained in this publication. All trademarks are the property of their respective owners. We are not responsible for the contents or any other changes or updates to them. The magazine is published independent and not affiliated in any way with the companies mentioned herein.

This publication may be reproduced in full or in part without the prior written permission of the publisher, Future Publishing Limited. This magazine is published for you and your colleagues. It is not intended to be sold or distributed to other individuals. All trademarks are the property of their respective owners. We are not responsible for the contents or any other changes or updates to them. The magazine is published independent and not affiliated in any way with the companies mentioned herein.

Radio World (ISSN 0264-3758) is published weekly, 52 times a year, at 139 West 42nd Street, 7th Floor, New York, NY 10036. Phone: (877) 667-9352. Periodicals postage rates are paid at New York, NY, and at additional mailing offices. POSTMASTER: Send address changes to Radio World, P.O. Box 1051, Lowell, MA 01853.

**Recycle Please recycle.** We are committed to only using magazine paper from a supplier that recycles 100% of its waste, wherever possible. Using recycled and chlorine-free manufacture. The paper in this magazine was sourced from responsible and sustainable managed forests. For more information on environmental and economic standards, the manufacturing process, visit [www.futureus.com](http://www.futureus.com) and FSC certified claim label 04-1031.



Future is a leading provider of content and insights for the industry. For more information, contact [info@futureus.com](mailto:info@futureus.com). Future is a leading provider of content and insights for the industry. For more information, contact [info@futureus.com](mailto:info@futureus.com). Future is a leading provider of content and insights for the industry. For more information, contact [info@futureus.com](mailto:info@futureus.com).



The robot Ameca, seen here in a promotional video from Engineered Arts, will appear on-stage at the NAB Show.

# AI sweeps across our industry

To prep, check out an exciting new ebook



**Paul McLane**  
Editor in Chief

**W**ill you attend the NAB Show? I look forward to seeing you in the aisles or sessions.

In this issue we provide a sampling of the technical presentations. But have little doubt:

the onset of artificial intelligence-based tools is going to be a major discussion point.

Daniel Anstandig will give the convention's welcoming session keynote on April 15, and he'll be joined on stage by a humanoid robot that uses artificial intelligence technology. This is being described as the world's first keynote speech co-presented by a human and an advanced AI robot.

Anstandig is CEO of Futuri, which jolted the radio industry with the introduction a year ago of the AI-based platform called RadioGPT, later renamed as Futuri AudioAI.

At the session he will be joined by Ameca, "an autonomously AI-powered humanoid robot" developed by Engineered Arts, and they'll discuss a study about what audiences think about the use of AI in broadcast media. Anstandig plans to discuss "the delicate balance of innovation and user expectations."

There will be numerous other sessions about AI, in the Broadcast Engineering & IT Conference as well as other parts of the convention. But you don't have to wait for NAB to learn how AI is changing radio workflows. Please check out Radio World's new free ebook "Artificial Intelligence in Radio."

To prepare the ebook I gathered input from a range of experts and tech sponsors, including a commentary by Anstandig himself about the uptake of AI over the past year. But my favorite article is the special report at the end, in which numerous broadcasters talked to me about how they're using AI to host air shifts, report the weather, synthesize listener voices, create outlines for sales presentations, write spec spots and much more.

You can find it at <http://radioworld.com/ebooks>.

## THIS ISSUE

**NEWS**

**4** Newswatch

**FEATURES**

**10** Torque those terminal screws the right way

**NAB SHOW**

**3** From the Editor

**5** Partial County Alerting will be in spotlight

**9** Trueblood to discuss "ROI and how to speak it"

**14** Expect renovation work at the LVCC

**20** Using drones to verify FM antenna performance

**26** Research points to value of human talent

**32** Why worry about your air chain?

**34** At Lotus, Natalie Marsh nourishes connections

**38** A sampler of BEITC sessions

**40** Now can I forget about cybersecurity?

**OPINION**

**45** In-vehicle gaming is an essential opportunity





## NewsWatch Remembering Bob Heil

Bob Heil died in February at the age of 83. He had cancer.

"Driven by a lifelong passion for sound, Bob's pioneering work revolutionized how concertgoers experienced live sound," Heil Sound posted on Facebook.

He invented the Heil Talk Box used memorably by musicians like Peter Frampton, Joe Walsh, Slash, Richie Sambora and others. He was invited to exhibit his innovations at the Rock and Roll Hall of Fame.


Heil was a proficient theater organ musician who began to perform at restaurants at the age of 14 and soon on the Wurlitzer theater organ at the Fabulous Fox Theatre in St. Louis. In his early 20s he began designing and building organ installations.

Heil Sound formed in 1966 to provide pro touring equipment and system design and gear for music festivals. His career was jumpstarted when the Grateful Dead arrived in St. Louis to play the Fabulous Fox in 1970 without a sound system. Bob provided his own, and the band asked him to join them on the road.

According to Heil's obituary, the first Heil Talk Box was built for Frampton's girlfriend to give to the musician as a Christmas present in 1974.

He also built the quadrophonic mixer for the Who. He later built home theater systems and was on the original test team for the RCA DirecTV dish system, becoming one of the largest RCA dealers. The company entered mic manufacturing in the 1990s based in part on the prompting of Joe Walsh.

Heil was an avid, active amateur radio operator since his early teens; he later manufactured products for ham radio.

In 2022 Bob and Sarah Heil transferred ownership of their company to President/CEO Ash Levitt and Director of Operations Steve Warford. 



**Above**  
At the Rock and Roll Hall of Fame, Bob Heil holds a Talk Box signed by Peter Frampton and Joe Walsh.

# MONITOR YOUR UNMANNED STUDIOS 24/7

No one at the studio? Add studio monitoring to your ARC Plus system and stay on top of your entire operation. Manage multiple air signals, live IP streams, environmental conditions, UPS, IT equipment and more.

BURK KEEPS YOU IN CONTROL EVEN WHEN NO ONE IS THERE.

CALL US AT **978-486-0086**  
OR VISIT **WWW.BURK.COM**

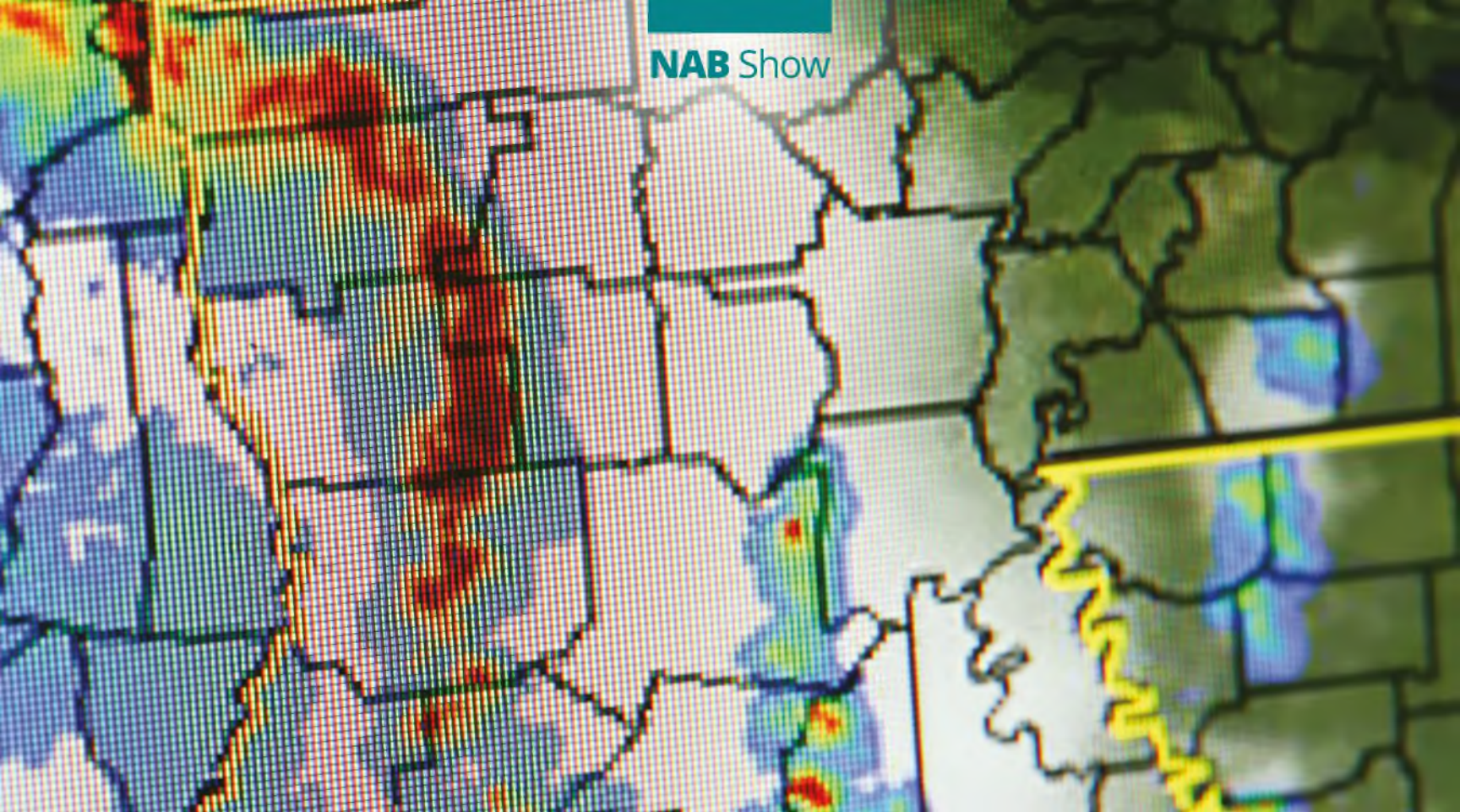
**NABSHOW**  
Where Content Comes to Life

JOIN US AT NAB **BOOTH #W3621**

**BURK**  
TECHNOLOGY

 **MADE IN THE USA**





# Partial County Alerting will be in spotlight at NAB Show

5

Program seeks to make sure alerts go only where they're needed

**P**artial County Alerting allows broadcasters to tailor the dissemination of EAS messages to affected areas. It will be the subject of a panel discussion in the Broadcast Engineering & IT Conference on Monday of the NAB Show.

Adrienne Abbott is chair of the Nevada State Emergency Communications Committee. Tim Schott is a meteorologist at the Analyze, Forecast and Support Office of NOAA, while Dan Berc is warning coordination meteorologist with the Las Vegas Weather Forecast Office of NOAA and the National Weather Service.

Adrienne Abbott answered our questions by email:

**RW** What is Partial County Alerting and why does it matter?

**Adrienne Abbott:** PCA is a National Weather Service programming capability that provides broadcasters with EAS weather activations targeted specifically to the area covered by the broadcaster's signal. At the same time, PCA

also targets warning dissemination on NOAA Weather Radio (NWR).

Broadcast signals don't stop at county lines and they may not cover an entire county. PCA works by dividing the county into subdivisions based on microclimates, weather patterns, broadcast footprints and other geographic factors.

PCA is addressed in the FCC Part 11 Rules detailing the EAS Protocol, 11.31(c), which states that a county may be defined by one or more "subdivisions" and there may be as many as nine subdivisions. For maximum communications clarity, the NWS and its broadcaster partners are using the phrase "county partitions" instead of "county subdivisions." The broadcaster chooses which partitions apply to their broadcast area and very easily programs that information into their EAS equipment.

By utilizing county partitions, the EAS equipment will receive and rebroadcast only the EAS weather activations for the selected partitions. This increases the credibility of EAS weather activations because the broadcast audience

## Above

A stock photo of weather patterns on a computer display. PCA provides stations with EAS weather activations targeted to specific areas.



**Right**  
PCA zones allow officials to focus alerts on a selected portion of Clark County, Nev. From the National Weather Service page [www.weather.gov/vef/ClarkCountyPCA](http://www.weather.gov/vef/ClarkCountyPCA).

Area at risk

Area alerted

Nevada

Nevada

*A Clark County, Nevada alert to the entire county, even though only a small section was forecast to be at risk.*

*A Partial County Alert limited to the impacted section of Clark County.*

doesn't hear warnings that don't apply to them.

### **RW** How does it work, technically?

**Abbott:** PCA works well in

Clark County, Nev., because the county is very large, larger than several East Coast states, and no radio or TV station has a signal that covers the entire county.

The most heavily populated area, and the one with the most broadcast signals, is the Las Vegas Valley. Before PCA, the Las Vegas broadcasters would receive EAS weather activations for storms which were outside the valley and confined to the rural areas of Clark County. With PCA, broadcasters covering the outlying communities such as Mesquite, Indian Springs or Laughlin receive and rebroadcast EAS weather activations for those areas, while Las Vegas radio and TV stations do not activate EAS, allowing their audiences to enjoy their usual sunny skies with no broadcast interruptions.

### **RW** Are there other particular parts of the country where PCA would be helpful?

**Abbott:** PCA is helpful anywhere a county has various ecologies and microclimates, geographic features like mountains, plains, valleys, canyons, lakes and seashores, and broadcast signals that don't cover the entire area.

We have also found it helpful for counties with discrete population centers, which is exactly the case in Clark County. It's particularly helpful for very large counties; in fact, the 29 largest counties in the continental United States lie west of the Mississippi River. While many of the large counties of the western states can certainly benefit from PCA, other areas of the country can benefit as well.

applications. However, PCA will be included in an upcoming software baseline deployment from NWS headquarters. We expect additional WFOs will on-board PCA for one or more of their counties in the first half of 2025.

### **RW** What has the experience in Clark County taught you?

**Abbott:** What we've learned in Las Vegas is that it can take time to see the benefit of PCA. The first year it was implemented, there was a very mild monsoon season with relatively few weather events that necessitated EAS activations. However, those activations were issued with PCA and we were able to see the benefit of this improvement.

### **RW** Which organizations in a given area need to be involved for PCA to be put to work in a given area?

**Abbott:** The FCC rules address this when they state, "Any subdivisions must be defined and agreed to by the local officials prior to use." And that's exactly what we have done. Planning for PCA implementation involves the Weather Forecast Office (WFO), the State Emergency Communications Committee chair and members, the state or local broadcaster association and state and local emergency managers. The Las Vegas WFO even conducted a public comment period. It's a team effort to obtain input and implement this alerting improvement.

### **RW** What else should we know?

**Abbott:** If someone complains that there are "too many EAS activations" from the Weather Service, they should know that there are some options available to make those activations more applicable to their station. The place to begin this discussion is with the warning coordination meteorologist, or WCM, at their local WFO. They should work with their EAS SECC and their NWS offices to implement a solution that can improve their situation. **RW**

### **RW** How does the National Weather Service use PCA and what are its plans to expand it?

**Abbott:** The 122 Weather Forecast Offices, or WFOs, operate on a national software baseline. Six offices are currently employing PCA using local

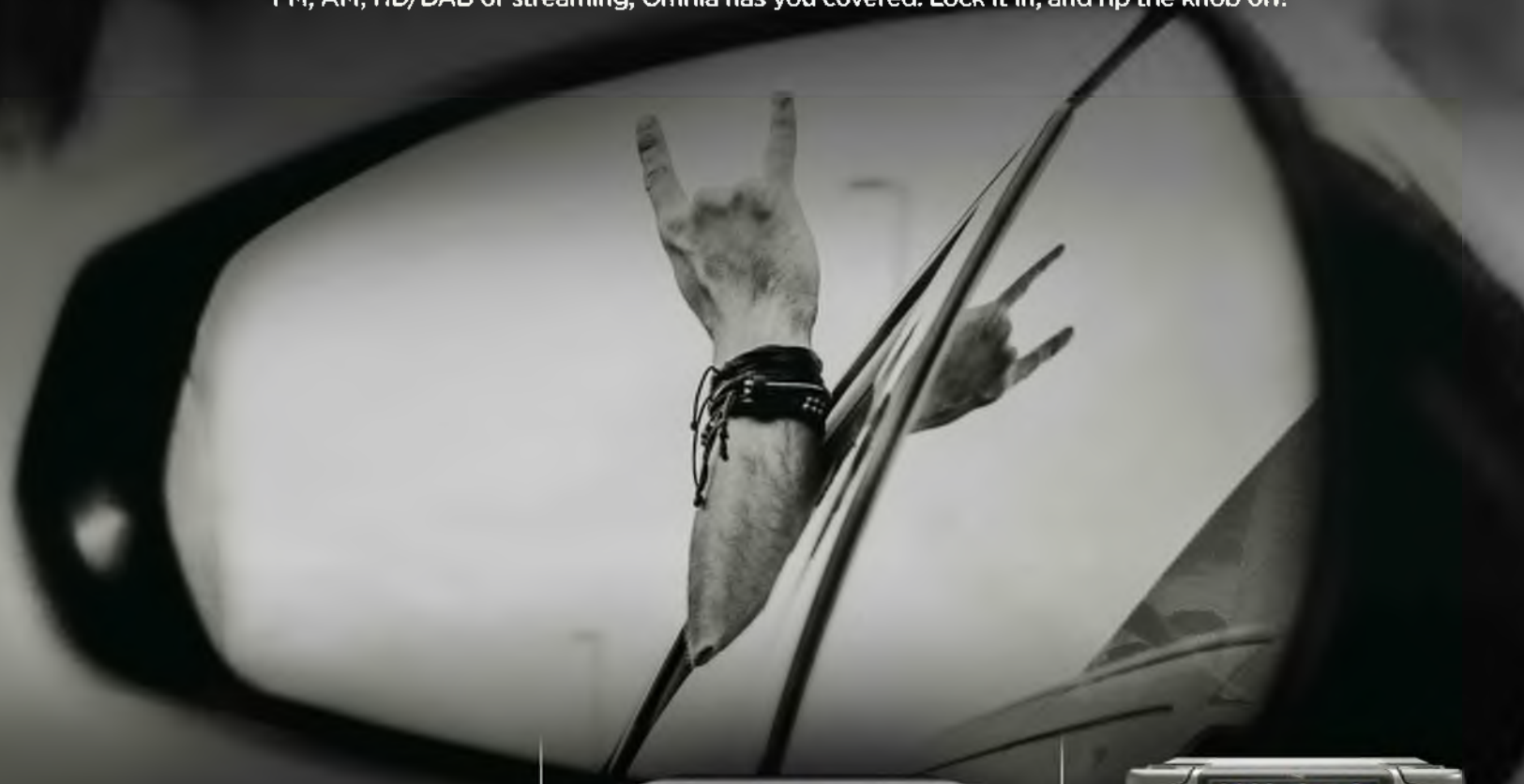
**NX Series**  
3 kW - 50 kW AM  
Radio Shack  
Outstanding Control  
86-88% Efficiency  
Compact  
nautel.com/NX

# Lock in your listeners!

Radio isn't a penny-ante game; it's a high-stakes, winner-take-all roughhouse where second place is only a footnote. You need every edge you can get to hook and hold your audience.

That's why the winners choose Omnia. Only Omnia gives them the market-leading sound that grabs listeners by the ears and locks them in. It's the competitive edge that makes your station sound like a champion — and K.O.'s the competition.

FM, AM, HD/DAB or streaming, Omnia has you covered. Lock it in, and rip the knob off!



### Omnia VOLT

Lets you run with the big boys  
- not with the pack.



### Omnia.9

The ultimate toolbox for audio  
processing perfectionists.



### Omnia.11

The proven winner. Nothing  
compares to The King.



**BROADCAST WITHOUT LIMITS**

[TelosAlliance.com/Omnia](http://TelosAlliance.com/Omnia)



nabshow.com

2024

# Capture MAXIMUM ROI

*Register Today!*  
Use code **MP06** for a  
**FREE Exhibits Pass!**



*Learn new strategies* to increase your bottom line. *Discover innovative technologies* to grow your business. *Expand your network* at the preeminent event for broadcasters. *Maximize your ROI* with an epic experience full of sessions and events tailored for TV and radio broadcasters.

**NABSHOW**<sup>®</sup>  
*Where Content Comes to Life*

**EXHIBITS: APRIL 14-17, 2024**  
**EDUCATION: APRIL 13-17**  
**LAS VEGAS, NV**

# New Bridge-IT Codecs Unveiled at NAB2024



Tieline Bridge-IT II Codec

At NAB2024 Tieline unveils the highly anticipated new Bridge-IT II and Bridge-IT XTRA II IP audio codecs, which are designed to deliver affordable, reliable, and high quality IP broadcasting with:

- Seamless integration throughout the latest IP network infrastructure.
- Multiple layers of redundancy.
- Simple configuration and control.

Unlike some low cost alternatives, Tieline's Bridge-IT II and Bridge-IT XTRA II codecs have a front panel screen and keypad for simple operation. Smartstream PLUS redundant streaming and Fuse-IP data aggregation are included as standard to deliver rock-solid IP connections. The new codecs are perfect for:

- Home studios and simple remote broadcasts
- Studio-to-Transmitter Links
- Interstudio / Studio-to-Studio Links (SSLs)
- Multi-unicasting and Multicasting.

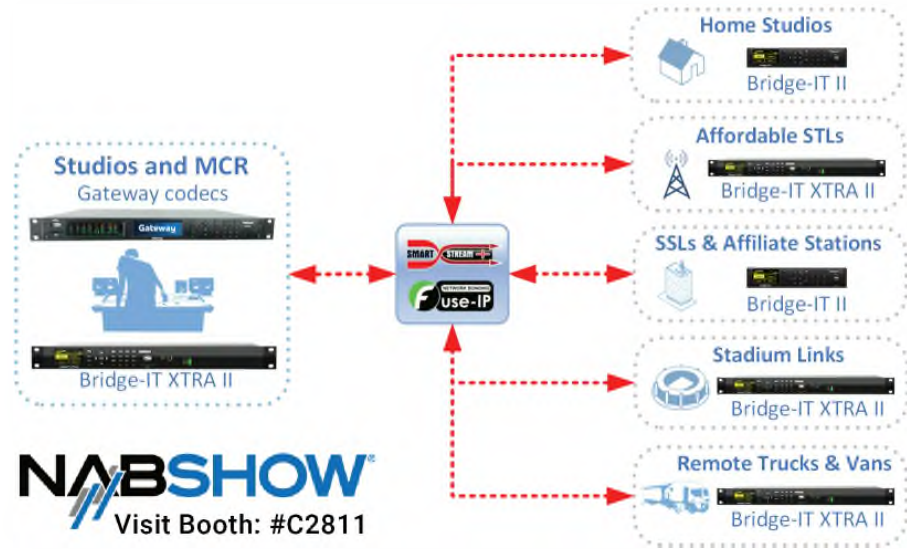
## New Generation Bridge-IT II Benefits

Bridge-IT II and Bridge-IT XTRA II include all your favorite first generation Bridge-IT features, like XLR analog and digital AES inputs, the full range of

encoding options, and support for multi-unicast and multicast connections. Additionally, they feature:

- Native support for AES67, ST2110-30, ST2022-7, Livewire, RAVENNA and NMOS IS-04 and IS-05.
- Two full-duplex mono connections, or full duplex stereo.
- Multiple Ethernet and AoIP ports.
- Failover to another connection, HTTP stream, or audio file playback.

SmartStream PLUS redundant streaming is included as standard and the ToolBox HTML5 web-GUI and optional Cloud Codec Controller software deliver real-time monitoring and management of connections. Visit Tieline booth C2811 at NAB 2024 to see the new Bridge-IT II codecs firsthand.



**NABSHOW**  
Visit Booth: #C2811

[Click here](#) or scan the QR Code to register your interest in Bridge-IT II and Bridge-IT XTRA II.





## MPX Codec Solutions Now Shipping

### Flexible FM-MPX and $\mu$ MPX Codecs Now Available...

At NAB last year Tieline revealed the new MPX I and MPX II codecs and the MPX II was awarded the 2023 NAB Show Product of the Year Award and a Radio World Best of Show Award.

Tieline MPX codecs deliver composite FM multiplex (MPX) codec solutions for real-time network distribution of FM-MPX, or MicroMPX ( $\mu$ MPX) signals to transmitter sites.

Both the MPX I and MPX II support sending the full uncompressed FM signal, or purchase the optional compressed  $\mu$ MPX license to deliver high-quality multiplexed FM signals at lower bit-rates.

The codecs support analog MPX (BNC) or MPX over AES192 to deliver a wide range of flexible composite encoder and decoder configurations for many different applications. Order an optional satellite tuner card with MPEG-TS and MPE support which lets you encode MPEG-TS over IP to transmit UDP streams over DVB satellite connections.

### Benefits of Tieline MPX Solutions

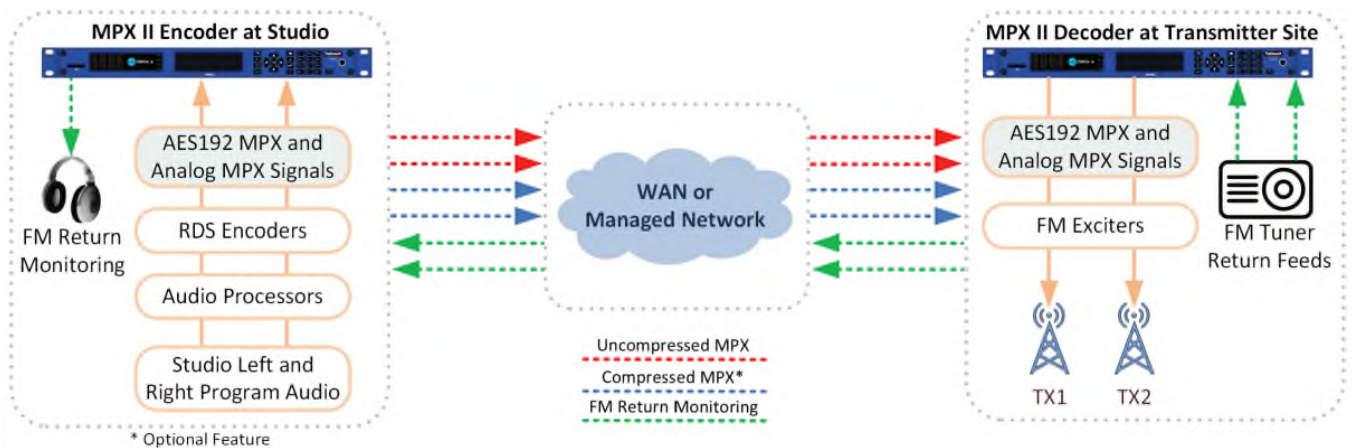
Sending transmission-ready FM composite signals from the studio allows broadcasters to maintain audio processing and RDS data insertion at the studio. This



Tieline MPX II Codecs

significantly reduces capital and operational costs by eliminating processing equipment from transmitter sites, which reduces on-site power consumption, wiring and rack space requirements, as well as site visits for service and support. Composite MPX over IP signals can be easily replicated and distributed using multicast and multi-unicast technologies and take advantage of rock solid redundancy features like redundant streaming, RIST, FEC, and automated SD card file failover.

The MPX II is now shipping and you can see both codecs on stand C2811 at NAB2024.



Tieline MPX and MicroMPX Solutions

## Tieline ViA Takes Pole Position in Antarctica

José Antonio Rodríguez González is a special operations technician at Catalunya Ràdio (CCMA). His report from the Spanish Antarctic bases describes working and living in such an isolated environment. The full report can be viewed at [www.tieline.com](http://www.tieline.com)

We didn't have much time to prepare for our Antarctic trip, so preparations for travel moved very fast. We prioritised equipment that was as light and as versatile as possible, since the trip was long and warm clothes were already a significant load!

Given the extreme environmental conditions, and the need to maximise versatility, the Tieline ViA was a perfect fit. The ViA codec allowed me to connect using IP, ISDN, or even through POTS/PSTN telephone operators in Argentina and Chile.



Reporter Domènec Subirà (left) and Technician José Antonio Rodríguez (right) in Antarctica

We connected live using the ViA from the Spanish Antarctic station BAE Juan Carlos, as well as the Oceanographic Research Vessel Hespérides. In addition, we did numerous interviews and recorded round tables with up to 3 people at a time.

At the base we could connect using their VSAT terminal, or mobility was provided by a BGAN and a Starlink antenna that we carried. VSAT provided a symmetrical 2 Mbps connection as it was shared with about 30 people at the station. Starlink provided a 180Mbps download and 40 Mbps upload. Challenges included the low temperatures and seeing how the battery performed. We found it worked very well, as did the codec data link provided by the Starlink system.

We connected using the Tieline Music PLUS algorithm in mono at 64kbps. The MCR at the Catalunya Ràdio Production Center in Barcelona sent us a clean mix-minus feed via a Merlin PLUS codec at our studio for live bidirectional live interviews and this worked well. We customized the headphone mixes on the codec using the touchscreen Matrix Editor. We also used the built-in input compressors and equalizers. The touch screen and menus are easy to use and in general we find the codec easy to set up and operate.

The trip was an adventure and very successful for CCMA. I find the ViA codec very flexible because it allows me to record while connecting live. In a challenging environment like Antarctica, the ViA's reliability, audio quality, latency, and overall performance was very good – it was a great part of our team.



Domènec Subirà ready to report from Antarctica with the Tieline ViA codec



## 2024 - Get Set For a Huge Year of Sport

There is no doubt 2024 is going to be a huge year in sport. Along with all the regular U.S. coverage of sports like Major League Baseball, NBA basketball, NHL hockey, and the full range of college sports across the U.S., this year sees the Olympics being hosted in Paris in July. That means now is the perfect time to ensure you have all the portable broadcasting kit you require for the next 12 months.

### Sports Remotes Anywhere, Anytime

[Click here](#) or scan the QR code to download our FREE Sports Remote Broadcasting eBook for all the latest solutions available for upcoming remotes in 2024.



KZSU Stanford broadcasting with ViA from Notre Dame Stadium, Indiana

## Are You Ready for an Election Year?

You may have noticed that U.S. election coverage has been steadily ramping up throughout early 2024, and consequently, we have fielded lots of calls enquiring about the best broadcast solutions for political rallies, interviews, and press conferences.

### Flexible Election Remotes with ViA

Setting up for election coverage always brings its own challenges, so you need lots of fallback options. The ViA delivers 7 IP interface data connection options, hitless packet switching with SmartStream PLUS redundant streaming, flexible routing, built-in input dynamics, and full remote control – everything you need for a successful mission-critical live broadcast.



[Click here](#) or scan the QR Code for more election coverage solutions.

### Guest Interviews

The go-to solution for these interviews is the Report-IT Enterprise app, which allows users to quickly download and install Report-IT onto their phone and go live securely within seconds.

Tieline America LLC  
7202 E. 87th Street, Suite #116,  
Indianapolis, IN 46256  
US Toll-free 1-888-211-6989  
Ph: 1-317-845-8000  
Fax: 1-317-913-6915  
E-mail: [sales@tieline.com](mailto:sales@tieline.com)

**Tieline**   
The Codec Company

[www.tieline.com](http://www.tieline.com)

International  
Tieline Research Pty Ltd  
4 Bendsten Place  
Balcatta WA 6021 Australia

Ph: +61-8-9413-2000  
E-mail: [info@tieline.com](mailto:info@tieline.com)

# Trueblood to discuss “ROI and how to speak it”

This year’s SBE Ennes Workshop includes practical advice for managing up



Above  
Kevin  
Trueblood

**T**he Society of Broadcast Engineers will offer two days of sessions in its Ennes Workshop at the 2024 NAB Show. The workshop returns to the Las Vegas Convention Center after being held at the Westgate last year. It will feature tracks on “RF101” and “Media over IP Essentials.”

Among the sessions is “ROI and how to speak it,” delving into concepts of return on investment, cost of acquisition and similar terms. It will be presented by Kevin Trueblood, associate general manager for technology and operations at WGCU Public Media in Fort Myers, Fla.

**RW** Can you give us a sample of terms you’ll discuss?

**Kevin Trueblood:** We’ll go over things like depreciation and capital budgets, but the point of the presentation is to help engineers fit their projects into the overall scope of the business of broadcasting.

Typically engineering is viewed as a cost center, and while those expenses are investments into the business, it’s important to be able to understand WHY these expenses benefit the business beyond just shiny new equipment and how to define the returns they can provide.

**RW** The term “total cost of ownership” has become familiar in the purchase of transmitters. How can that concept be applied across other parts of the radio station?

**Trueblood:** This is huge on the IT side of things, which for modern facilities is a big part of your air chain. More and

more software and services have become subscription-based, so if you’re hosting a local server, you have to factor in not just hardware costs, but also the cost of software over time, the infrastructure to host the server such as HVAC, people to maintain the servers, administer backups and associated connectivity.

**RW** A related session is about “How to Talk Like a Manager,” where you’ll be joined by Cindy and Gary Cavell and which concludes the second day’s agenda. How is this discussion different from the above?

**Trueblood:** If your day is spent in the trenches, out in the field and putting out fires, you have a great working knowledge of the day-to-day operations of a facility. But to move up in your career and to help you understand why things are the way they are at your facility, it’s helpful to get an understanding from people whose job it is to make the decisions that impact those day-to-day operations.

**RW** Are there common problems or mistakes engineers tend to make when talking with corporate types? How can they avoid them?

**Trueblood:** Very often engineers think in logical terms and believe that something is impossible unless it fits into a specific framework. In reality, accomplishing a goal and doing your best work can take some creative thinking and challenging your ideals.

**RW** Looking across our industry, what do you think is the biggest challenge facing broadcast engineers and their profession broadly?

**Trueblood:** Technology is both our enemy and our friend. Modern technology enables us to do far more with far less, but at the same time personnel shortages and dwindling budgets means resources can be stretched too thin, making it a challenge to get ahead and accomplish goals.

**RW** What else should we know?

**Trueblood:** My hope is this provides some insight to professionals who are either new to the industry or looking to make a move upwards in their career. Being able to communicate effectively and understand how your work fits in to the bigger picture can allow both internal and external stakeholders to see a maximum return on their investments. **RW**



## Ennes Agenda

Find the program for the two-day workshop at <https://sbe.org/sbe-ennes-workshop-2024-nab/>.





**John Bisset**

**CPBE**

The author is in his 33rd year of writing Workbench. He handles western U.S. radio sales for the Telos Alliance and is a past recipient of the SBE's Educator of the Year Award.



### A Perfect Fit

You and Workbench are a perfect fit. That's why we want your tips! Email [johnpbisset@gmail.com](mailto:johnpbisset@gmail.com).

10



# Torque those terminal screws the right way

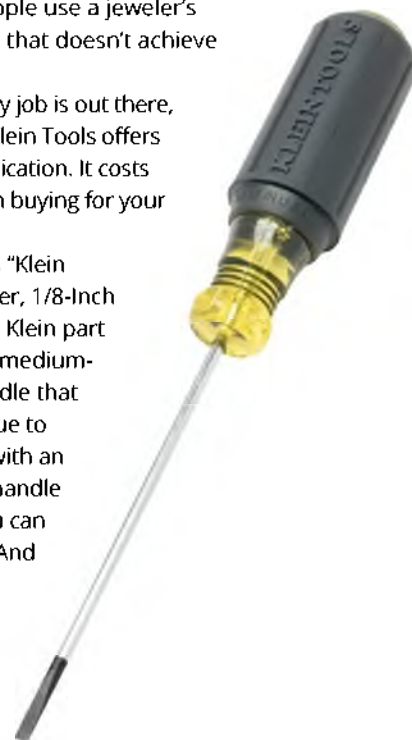
Also, give your studio countertop a lift — hydraulically

**W**ayne Eckert is with the Rural Florida Communications Cooperative and a frequent Workbench contributor. He notices that a lot of electronics are using terminal blocks now. He finds them to be decent connectors, usually rated for AWG 24 to AWG 14 at up to 15 Amps, but says they're prone to overheating and melting, often because the screws were not torqued properly.

These terminals require a screwdriver with a 1/8-inch blade, but many people use a jeweler's screwdriver or other tool that doesn't achieve the proper fit.

As usual, the tool for any job is out there, and Wayne learned that Klein Tools offers a screwdriver for this application. It costs about \$9 and is well worth buying for your toolbox or pouch.

The full proper name is "Klein Terminal Block Screwdriver, 1/8-Inch Cabinet, TB-DIN," and the Klein part number is 612-4. It has a medium-sized rubber-sleeved handle that will deliver plenty of torque to tighten DIN connectors, with an exact fit. The butt of the handle is labeled "TB-DIN" so you can find it easily in your bag. And the screwdriver is made in the USA.



**Above**  
Klein's 612-4 screwdriver provides an exact fit for terminal block screws.

**Right**  
Closeup of a Euro connector.

**Far right**  
The Klein 612-4.



# INTRODUCING THE 677 EAS TRIIPLE TUNER

AM | FM | NOAA



## Powerful features in a compact half-rack design.



Inovonics' 677 Triple Tuner incorporates the latest DSP-based technology for a fresh new design in EAS Receiver Monitors. Fully tested and ready to go after an exhaustive Beta testing program in the field with respected Radio Engineers in the industry.

The all-digital 677 has three discrete and independent receivers for any combination of AM, FM, or NOAA reception and monitoring. Each receiver has off-air antenna inputs and balanced monaural XLR outputs.

See it at NAB, Booth W3349 - West Hall

## 677 FEATURE HIGHLIGHTS

- Easy front panel set-up via jog wheel with LED readout and metering.
- User-friendly management via Web interface from any Web enabled device.
- Selectable remote listening by Web Stream.
- Alarms & notifications by email or SMS and full SNMP support.
- Six rear-panel GPOs may be user-assigned to alarm functions.



[www.inovonicsbroadcast.com](http://www.inovonicsbroadcast.com) | [sales@inovonicsbroadcast.com](mailto:sales@inovonicsbroadcast.com) | 831-458-0552

### WHY INOVONICS?

- Quality Solutions. Competitive Prices.
- Three-year Factory Warranty.
- Quick to install. Easy to Program.
- Quality after sales service.





## Archie pays homage

Retired broadcast engineer Archie Stulc admired the pictures we published of Dave Morgan's master parts depot. Archie joked that if he were found worthy, he would enter that holy site and pay due homage.

Dave's organizational process may in fact seem over the top, but what a pleasure to work with the results. And the project didn't happen in just a few days; it took weeks to plan and months to get everything organized. Dave adds that he's still not finished.

The key to organizing as Dave did is to start small and build on what you can, when you can. The effort does pay dividends in knowing what spares you have on hand.

## Cue the hydraulics

Chris Wilk is the transmitter engineer for Draper Broadcasting in Salisbury, Md. He and his team faced a common decision: Should we build our new studio for seated or standing operators? If standing, how do we accommodate the range of heights of our air staff or an operator who uses a wheelchair?

Custom cabinet shops can build you a counter that will accommodate both modes of operation using hydraulics, but Chris found a retrofit kit from Ergosource in Minnesota that costs about \$1,500.

The lifting is performed by four hydraulic "legs" affixed to the cabinet. A local cabinet maker helped them attach the hydraulic mechanism onto the furniture; then Chris mounted an up/down switch in a rack panel to allow each operator to select the best height.

At [www.ergosource.com](http://www.ergosource.com) scroll down to Hydraulic Lift Systems.

If you take this approach, Chris reminds you to provide an extended cable harness for the table-top equipment with enough loop to allow the counter to be raised and lowered.

The kit comes in six different adjustment ranges from 6 to 16 inches. There are also hand-crank versions and kits for tables with fewer legs.

## Rick's Command performance

Rick Foster has been behind the mic for more than 60 years, and although he's mostly retired, he still hosts a show on a community station on Saturday afternoons.

Rick, who has used a lot of headphones, saw William Harrison's tip in January about installing a hook on a broadcast rack. Rick has found an inexpensive and secure "hanger" of his own, a hook in the Command brand line from 3M. You can stick it on the underside of the table that holds the mic or the console. Rick says he affixed a hook in his home studio 10 years ago and it's still in place. 🎧



**Above**  
Studio furniture controlled by a hydraulic lift.

**Right**  
A 3M Command Hook holds headphones.



Join us at NAB C4110



uncompromised and cost-effective  
**the new crystal.**

broadcast on-air console | mc<sup>2</sup> add-on surface | DAW controller



LAWO.COM





PHOTO: LVCVA Archive

Writer



Randy J. Stine

Radio World's lead news contributor

# Expect renovation work at the LVCC

The North Hall closure probably won't affect radio too much, though next year Central will be the hall under renovation

**Y**ou may find a few "Pardon Our Dust" signs at this year's NAB Show as renovation of the North Hall of the Las Vegas Convention Center begins.

The closure of that hall means organizers have rearranged some components of their event.

The LVCC was begun in 1959 but has grown and morphed far beyond its original design. The North Hall alone is four decades old.

With the new West Hall well established, LVCC management will renovate North and its meeting rooms. They also plan to build a new Grand Lobby between North and Central, adding natural light and views into the halls. Next year Central Hall will be offline for renovation.

A new climate-controlled interior concourse between North and South will provide interior access across the entire campus. There also are plans to add more meeting

rooms, improve signage and connectivity, and enhance parking lot and landscaping.

Ultimately, the facade and roof line will be updated to reflect the architectural look of the \$1 billion West Hall that opened in 2021. The projects will cost more than \$600 million. The work is expected to be completed by the end of 2025.

At the 2024 NAB Show, some exhibit space and meeting locations will be different. One observer said West Hall might feel "a bit more isolated" with North closed, but organizers are seeking to minimize the impact and are not worried about disruptions. They just want to make sure attendees are aware that the footprint will be altered.

As last year, the Broadcast Engineering & IT Conference will meet in the West Hall, and many radio industry exhibitors will be found there. Some radio suppliers also will be found in Central, as will the convention's Main Stage.

**Above**  
A less familiar view of the LVCC, with the new West Hall in the foreground. We're looking to the southeast. The roof of the North Hall is behind the monorail tracks, slightly to the left of center in this photo.

# GV<sup>2</sup>

# PROVING THAT LESS IS **MORE**

Nautel's GV2 transmitters support\* **JUST ADD AUDIO**,  
our breakthrough HD Radio Software-Based Air Chain.

**LESS** wiring, boxes, cost and complexity

**MORE** of what you need\*

- Blend-Lock eliminates HD/FM drift
- Omnia for Nautel FM + HD Audio Processing
- Flexible Air Chain hosting/location options
- New capabilities like an Air Chain selector
- Integrated GEN4: Importer, Exporter, PAR2 Engine
- Built-in STL and LiveWire
- All integrated for easy installation & management



## JUST ADD AUDIO



Everything  
Else Is Inside

**HD Radio**  
Digital AM & FM



Visit Nautel at **Booth W3042**



**ALWAYS FOR YOU**

\*Optional Software-Based Air Chain  
HD Radio is a trademark of DTS

[nautel.com/GV2](http://nautel.com/GV2)



The Broadcast District, a community engagement zone for people in the industry, will again be in West, which also will house exhibitors that are part of the Connect, Capitalize and Intelligent Content “pillars” of the show.

Planners have added exhibit space in the South Upper and South Lower Halls for the “Create” pillar, said Justine McVaney, senior VP and deputy managing director at NAB. She said most companies that were displaced from North Hall will relocate to South.

“Anytime there is construction and disruption it causes some stress. But it really isn’t anything new for us,” she said.

“We are used to moving people around the convention center. We strive every year to get people around what is a large facility as efficiently as possible.”

Floor traffic has been more evenly distributed since West Hall



**Above**  
The show drew about 65,000 people last year.

opened. “In 2023 we saw a much better flow of traffic across all three halls,” McVaney said. Attendance was approximately 65,000 last year, up about 20% from 2022 when the show resumed after COVID.

### Loopers

McVaney, who is responsible for the strategic development and delivery of NAB’s annual calendar of conventions, says transportation options will in place to get people from West Hall to the South Hall.

“We are adding shuttle stops at South Hall and utilizing some golf carts to move folks around. The Vegas Loop station in front of Central Hall will still be open over to the South Hall.”

NAB also will set up additional “interactive wayfinding kiosks” to help direct people to their destinations.

McVaney reminds attendees that they can

plan out their visit by using NAB’s online mapping tools.

“Familiarize yourself with our show services, where the shuttle stops are and how to hop the monorail. There are a lot of resources available. The results of the construction will be worth the disruption. The improved décor and improved facilities will be worth it in the end.”

NAB will again utilize the Vegas Loop, which consists of two tunnels under the campus that accommodate electric Tesla vehicles to shuttle attendees back and forth. It reduces a 25-minute walk across the 200-acre facility to a free ride of about two minutes.

The system “sure help move people quickly,” McVaney said. “We have been talking to the convention center about adding more vehicles this year to move attendees from the West to the South Hall,” where a new Creator Lab will focus on creators, equipment, distribution channels and monetization techniques.

Erica Johnson, director of communications for the Las Vegas Convention and Visitors Authority, said, “The LVCC has been working

# AQUABROADCAST

## COBALT Fully Featured FM Transmitters



### The FM Transmitter, perfected...

| INCLUDED AS STANDARD    | OPTIONAL EXTRAS          |
|-------------------------|--------------------------|
| ~ DDS Modulator         | ~ Dante / AES 67         |
| ~ Audio Processor       | ~ MicroMPX               |
| ~ RDS Encoder           | ~ 5 Band Audio Processor |
| ~ SNMP v1, v2c & v3     | ~ DC Power               |
| ~ Full Ethernet Control | ~ Dual Power supply      |

Available in the United States from



www.aquabroadcast.co.uk
info@aquabroadcast.co.uk

 **Gag!** audio subscription service from Comrex for remote contribution

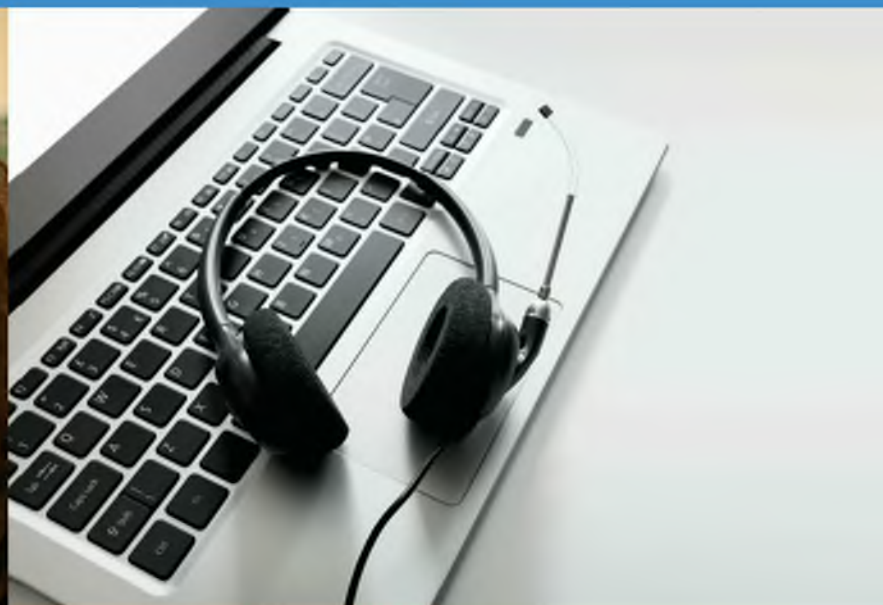
plus **BRIC-Link III**



### A WINNING COMBO

*for getting your guest on the air from anywhere*

Try it today! Free 14-day trial available with all new Gag! subscriptions.



**COMREX**  
BROADCAST RELIABLE

Visit us at NAB Show - booth #C2234  
Hear the difference:  + 

Contact us for more info: [info@comrex.com](mailto:info@comrex.com) | 1-978-784-1776 | [www.comrex.com](http://www.comrex.com)



**Right**

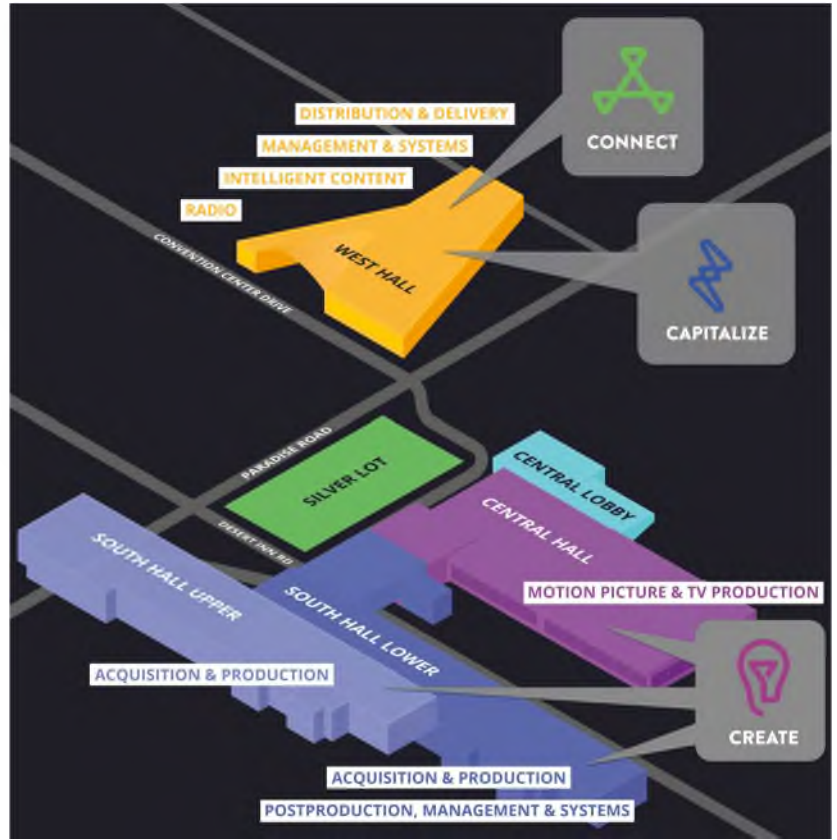
The diagram shows where content “pillars” of the show are located, but most radio-related companies will be in the North and Central Halls.

closely with NAB Show management in minimizing any impact of the renovation during the 2024 show, including wayfinding, signage and access.”

Radio World asked several radio technology exhibitors whether they are concerned about the closure of the North Hall. They told us they expect few issues.

Marty Sacks, executive VP of sales, marketing and strategy for Telos Alliance, says the company has moved from West to Central Hall to be more accessible to visits from people in the South Hall.

“Many of us have been going to NAB for years, so changes at LVCC are always disruptive to some extent. But there have been continual exhibit hall changes in the past few years, so I think attendees will not be too perplexed by the North Hall closure,” he said, adding that the company sells into both radio and TV markets, so Central Hall works well. 📻





# WHEN STAYING CONNECTED IS THE ONLY OPTION

VISIT US AT  
NABSHOW 2024  
IN BOOTH  
**W3934**



Impeccable Audio Quality

Maximum Data Throughput

All Worldwide STL Bands  
180 kHz – 38 GHz

Cost-efficient Configurations  
1+0, 1+1, 2+0 Hot Standby

## BUILT TO LAST

# Evolving The World Of Audio

PLAYOUT • MUSIC SCHEDULING • NEWS  
TRAFFIC • CLOUD • STREAMING

RCS evolves with your business, blending pioneering initiatives and valuable client input. Our groundbreaking Software as a Service (SaaS) seamlessly aligns with your distinct requirements, providing an unparalleled media experience.



**RCS**  
Sound Software®

[rcsworks.com](http://rcsworks.com)



# Using drones to verify FM antenna performance

Aerial vehicles are validating predictions made in computer simulations

**A** Saturday session of the Broadcast Engineering & IT Conference will explore "Using Drones to Verify FM Antenna Performance."  
 John Schadler is vice president of engineering for Dielectric LLC, which makes antennas, RF systems components and transmission line. Jason Schreiber is managing director of Sixarms, which uses drones to provide measurement solutions for broadcasters and other industries.

20

**RW** **What is your session about?**  
**John Schadler:** The paper will discuss the power of computer simulation and validate the predictions through comparisons to drone measurements. This in turn also shows the ability drone measurements have to verify antenna system performance. It will include case studies, one of which would be impractical for any far-field range and can only be realized using simulation and validation using drone-based measurements.

**RW** **Can you remind us about the FCC rule change that is the context for this?**  
**Schadler:** In June of 2021, Dielectric filed a proposed rulemaking with the FCC to allow the use of computer simulation to verify the performance of directional FM antennas. In November of 2021, the FCC showed very strong support of the proposal by unanimously deciding to move forward with the notice of proposed rulemaking and reduce the public comment period down to 30 days.  
 In May of 2022, new rules were adopted that give FM license applications the option of submitting computer-generated proofs of FM directional antenna patterns from the antenna's manufacturer in lieu of measured pattern plots and tabulations. That strong support and quick adoption stem from the benefits and evident accuracy that simulation offers over traditional range measurements.



John Schadler



Jason Schreiber

**RW** **How does the rule change bring drones into the discussion?**  
**Jason Schreiber:** The drone pattern measurement solution is used to validate and compare to the computer simulations.

**Schadler:** It supports simulation as an extremely powerful and accurate tool. It replaces physical modeling, prototyping and pattern test ranges.

**RW** **Tell us about the technology and the process involved.**  
**Schreiber:** Drone-based antenna pattern measurements are a relatively new technique, approximately 10 years, used to replace traditional helicopter and land-based field strength measurement practices. What was typically a very manual and time-consuming process is now fully automated, from the data collection to the drone flight path.

**Schadler:** The computer simulation process imports detailed Solid Edge

# The best total cost of ownership in the industry for over-the-air digital & analog radio transmission



## Flexiva™ Transmitters with PowerSmart® 3D

- Broadband amplification reduces size, energy use while maximizing efficiency
- Single-engineer maintenance with common spare parts
- High on-air reliability with no critical points of failure from 50w to 80kW

The perfect balance between high power efficiency, operational performance, and superior audio quality



[gatesair.com/radio](http://gatesair.com/radio)



**NABSHOW** Come Visit Us at Booth **W2730**  
Where Content Comes to Life

# No one delivers greater performance and network analytics for your IP audio and data streams



## Intraplex® IP Link 100c · 100e · 100n · 200 · MPXp

- Multi-stream encoding lowers channel costs
- Rock-solid, reliable Intraplex connectivity
- Real-time network diagnostics with LiveLook

Highly integrated codecs for next-generation, multichannel radio networks



[gatesair.com/codecs](http://gatesair.com/codecs)



**Intraplex Ascent** platform for scalable, multichannel audio/video over IP via SRT, available as either a 1RU server or a software-only solution



**Right**  
Measurement  
system  
configurations  
for FM radio,  
AM radio and  
UHF TV.



CAD drawings of the antenna and tower into ANSYS HFSS software, where the model is broken down into a tetrahedral mesh, and Maxwell's equations are solved at each node to produce radiation characteristics of the entire structure. Since the calculations are exact at each node, a detailed model with a tight mesh leads to an exact solution for all practical purposes.

**RW** I understand that Sixarms will introduce the use of tower imaging to obtain more accurate tower information.

**Schreiber:** Drones are currently playing a major role in creating "digital twins" of critical infrastructure. That is, a complete tower full of antennas and cables can now be mapped in three dimensions using a drone. Two major techniques are photo-based, or "photogrammetry," and laser-based "lidar." Both solutions now allow us to create full digital twins of our infrastructure to allow for planning, maintenance and auditing.

**RW** How many broadcasters have used these technologies as you'll describe?

**Schadler:** Since the start of the repack, Dielectric has designed more than 1,500 high-power antennas in a completely virtual environment as well as performed more than 100 UHF and VHF nearfield drone comparison studies.

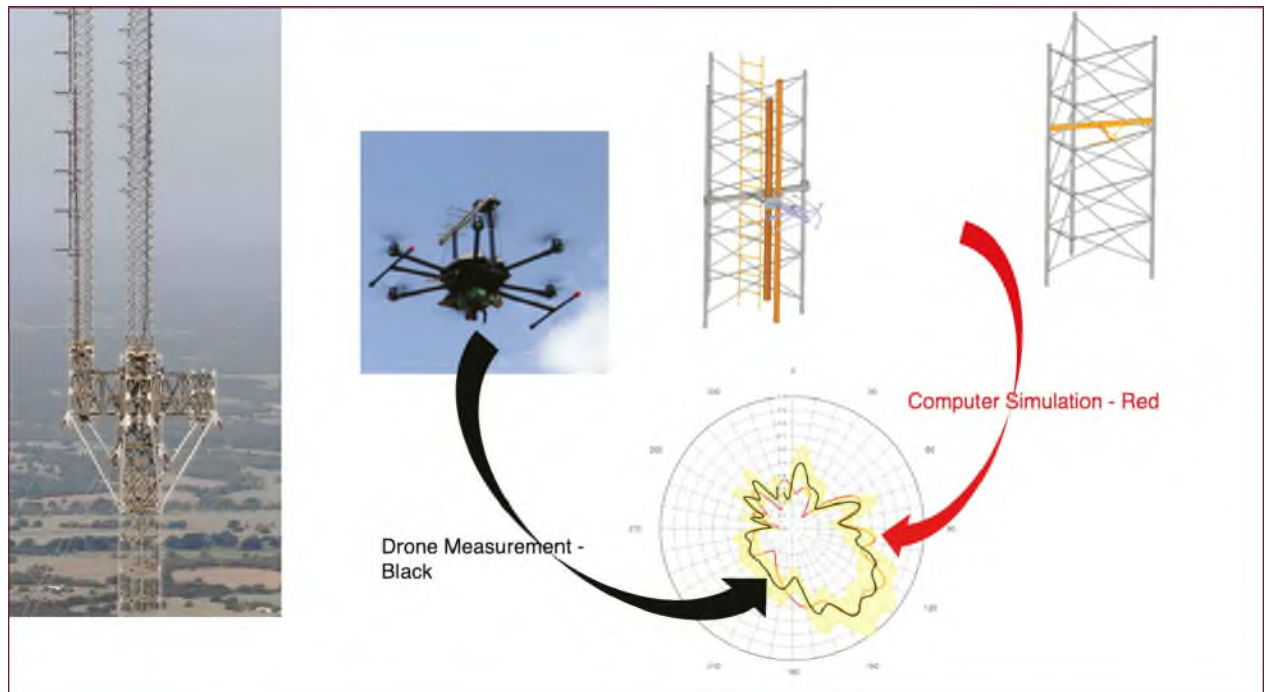
**Schreiber:** Since 2014, Sixarms and our partners have measured more than 800 antenna patterns by drone. These include AM and FM radio, HD Radio and VHF and UHF digital TV. This drone-based technique is being used by major U.S. and international broadcasters as well as broadcast infrastructure companies to validate that the antennas they have implemented have been manufactured and installed successfully.

**RW** What else should an engineering reader know?

**Schadler:** During the repack, extensive experience has been gained in drone measurement techniques as well as computer simulation of radiating structures. It has been shown that computer simulation and drone measurements are an accurate and cost-effective alternative to traditional FM range measurements and can predict and measure the performance of structures, which today would be impractical to perform any other way.

In the future, tower mapping can provide the means for more accurate simulation models, leading to even more exact results. For the present, though, a drone pattern measurement solution can be used to understand the impacts of the supporting structure and other structures in the FM radiating pattern. **RW**

**Right**  
The pattern  
plot compares  
computer-  
simulated  
performance of  
an FM antenna  
(visible on the  
tower section  
above the plot,  
in light blue)  
with drone  
measurements.  
The simulation  
must take into  
account the effect  
of the antenna's  
own tower as well  
as the second  
tower in its  
aperture.





# H10 Hybrid Console

The best of both worlds.

The H-10 Console offers the best of both worlds, combining the simplicity, reliability, performance, and ease of operation of analog with the flexibility and power of digital technologies. It is a perfect blend of traditional and modern features, providing an exceptional experience for any studio.



**HSeries**  
Controller

The H-Series Controller software is included as a standard feature with the H-10 studio console mixer, empowering users to control the console remotely from anywhere in the world.



**Mic**

Up to 4,  
with 2  
Built-in



**Line**

Up to 6  
stereo line  
inputs



**USB**

USB soundcard  
for playback &  
record



**Mix-**

For connecting  
your phone hybrid



**Bluetooth**

Connect Bluetooth  
enabled devices



**Inputs / Outputs**

Includes balanced and unbalanced,  
inputs and output



# STUDIO PLANNING? YOUR WHEATSTONE SALES ENGINEER CAN HELP YOU PLOT IT ALL OUT TO THE SMALLEST DETAIL.

- **WheatNet-IP** improves studio workflow
- **Wheatstone** reduces the effort of putting everything together
- **We are the maker** of the intelligent AoIP network engineered, manufactured and supported under one roof
- **Our services** cover the entire process from initial design and final staging in the Wheatstone Lab
- **Full support afterward** accommodating any combination of 200+ interconnected AoIP studio elements





Come see us at  
NAB booth W1731



Writer



**Jon  
Accarrino**  
Founder  
Ordo Digital

# Research points to value of human talent

In the age of AI, listeners still prefer authentic human voices on the radio

*The author will speak at the NAB Show in two sessions related to artificial intelligence, "Using AI as a Creative Content Tool" on Sunday afternoon and "AI Strategies for Sales, Marketing and Operations" on Tuesday morning.*

**A**s artificial intelligence continues making inroads into various industries, radio broadcasters have been contemplating if and how AI voices and DJs may supplement or even replace human talent. However, a new survey of more than 800 Americans by SmithGeiger Group indicates that radio listeners value authenticity and human connection from radio personalities over AI-generated voices. The survey results were presented at the 2024 Country Radio Seminar.

## A platform of personalities

The numbers reveal radio is still very much powered

by personalities. A full 86% of respondents prefer radio hosts who "feel authentic," rather than perfectly polished. Additionally, 73% favor DJs who go beyond just introducing songs to "share stories" and insights that bring deeper meaning to the music. And 68% like on-air talent to use a casual, relatable "everyman" communication style reminiscent of speaking with a friend, rather than a distant celebrity.

"The most successful influencers are themselves — they're real," said Andrew Finlayson, executive vice president of digital strategies at SmithGeiger. Finlayson presented the research at CRS.

"In a world that is going to be filled with AI content, this is an opportunity for radio," Finlayson said. "This is a chance to connect with the audience."

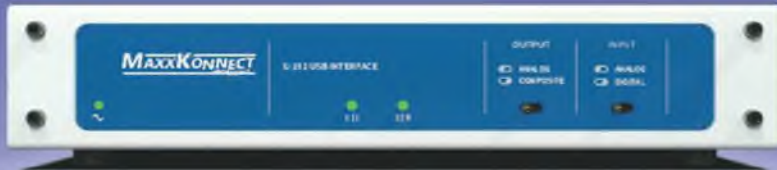
Perhaps most telling is that 47%, nearly half of those surveyed, had an outright distaste for AI radio voices, rating the concept poorly, or even hating it.



The  
**MaxxKonnnect**  
GROUP  
[www.maxxkonnnect.com](http://www.maxxkonnnect.com)

contract & project engineering • equipment sales  
prioritized wireless • innovative broadcast products

U.192 USB MPX Audio Interface



Thimeo STXtreme Advanced  
FM/HD Audio Processor



Studio & Transmitter  
Installation



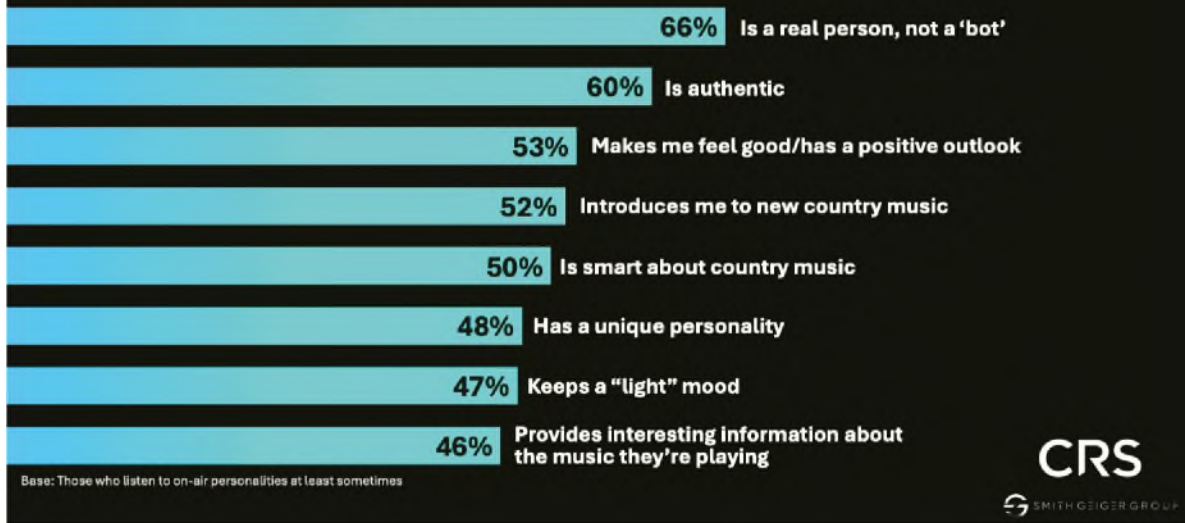
Reliable Wireless  
for Broadcast

[info@maxxkonnnect.com](mailto:info@maxxkonnnect.com) • 205-637-9600

**MaxxKonnnect. BROADCAST..BUILT.**



### Essential Elements for On-Air Talent



### AI's future in radio

At its essence, radio has always transcended mere entertainment. Unlike streaming playlists and algorithms, voices behind the mic provide community, wisdom and authentic comfort amid life's chaos. By boldly leveraging real human voices, stories and connections, broadcasters can foster a relationship rooted in trust. One that AI simply cannot replicate.

In a followup phone call, Finlayson

added, "Artificial intelligence can imitate human qualities, but it can't be authentic. An AI can't remember going to a concert."

But radio broadcasters shouldn't ignore practical opportunities for AI either. Stations may find success using AI voices for utility work, like promos, or producing weather reports.

"Hyper-local and hyper-personalization is beyond what a human can do on a daily basis," Finlayson said. "But AI can help scale those efforts for broadcasters."

Though AI voices may yet find useful applications in radio, the CRS study results suggest that putting more focus on fostering human connections on the airwaves is what radio listeners truly want.

For an industry facing AI disruption, that insight might just give some broadcasters a much-needed edge in their markets. But finding the right balance between how AI voices can be successfully used on-air without losing the audience still remains to be seen.

Key research takeaways from the CRS/SmithGeiger study:

- 86% prefer authentic DJs over perfectly polished talent
- 73% want DJs that share personal stories about the music
- 68% prefer a casual, relatable communication style
- 47% dislike the concept of AI radio voices
- Personalities that help audiences escape complexity have lasting value

*After a long career in national and local media spanning film, radio, broadcast television, digital and streaming, Jon Accarrino now consults clients on digital business strategies and artificial intelligence solutions through his company Ordo Digital.*

## Nearly half of those surveyed had an outright distaste for AI radio voices.

### Escape through connection

Interestingly, the survey also suggested most listeners don't want radio personalities espousing their political views (12%) or discussing international news (13%). What they desire is an escape from increasing complexity, anxiety and polarization in society. A commanding 90% of the country music fans surveyed said that it's important for a radio personality to "keep a light mood."

As Finlayson observed, "Escape factor is a big part of what you guys can do for the audience going forward. If you sit down at the end of the day and say, 'I help my audience escape all the worries and fears that they have in a complex and sometimes scary world,' you'll have done your job."

While AI promises efficiency and utility, only human beings can empathize with listeners, understand the role radio plays in their lives, and nurture that special relationship with the audience. Based on the survey results, broadcasters need to find the right balance between human personalities who authentically engage audiences and the latest tech innovations.



# Future-Proof Your Station with AI Solutions

for On-Air Talent, Listeners, and Clients

FUTURI

TopLine®

AI Futuri  
AudioAI™

TopicPulse®

POST®

SpotOn™

FUTURI  
MOBILE™

## Your Audience Is Ready

Discover how ready your audience is for AI content. Use the insights from our **free resource center** to guide your station's AI integration. AI is here to stay and is a crucial asset for broadcasters to compete in today's hyper-competitive environment.



Discover How to Reach New Heights  
[www.FuturiMedia.com](http://www.FuturiMedia.com)





KJZZ Phoenix, AZ



From the

# microphone to the antenna.

## Total Broadcast Solutions:

DNAV is a nationwide technical consulting firm who provides conceptualization, design, integration and network infrastructure turn-key solutions for studio and transmission facilities.

DNAV is focused on client needs, unique project vision and streamlined solutions that keep projects on time and on budget.

DNAV Total Broadcast Solutions

[DNAVinc.com](http://DNAVinc.com)

908.908.DNAV

[OnAir@DNAVinc.com](mailto:OnAir@DNAVinc.com)



# Come see us at NAB! Booth W3855



Good Karma Brands, owner of WTMJ News Talk Radio, WKTI Milwaukee ESPN Radio Affiliate and WGKB "The Truth" was consulted by DNAV for design and integration of their new flagship facility in downtown Milwaukee. Flagship and syndication studios for the Milwaukee Bucks Radio Network and the Milwaukee Brewers Radio Network are housed alongside cutting edge video, podcast and streaming studios.

Good Karma Brands New Facility Milwaukee, WI

CBS News Radio chose DNAV to team with the well respected CBS News Radio Engineering Department to design a cutting edge news delivery facility at the CBS Broadcast Center in New York City. Through a collaborative design-build project that focused on precise deadlines and critical requirements, DNAV delivered the new facility ahead of schedule, allowing news gathering and broadcasting staff to deliver critical content to millions of listeners each day.



CBS News Radio, New York City

# One



DNAV was chosen as the consultant and technical integrator for the rebuild of KJZZ, KBAQ and Sun Sounds, a public reading service for the blind. The project required extensive planning to streamline removal of thousands of feet of existing cabling, installation of 32,000 feet of new cabling and a balance of upgrading technology without affecting the award-winning quality of on-air broadcasts.

The reimagined broadcast facility includes primary and redundant studios for on-air, alongside production facilities and a dynamic newsroom to streamline broadcast and podcast capabilities.

KJZZ / KBAQ Phoenix, AZ





# Why worry about your air chain?

Mike Pappas encourages engineers to perform an “audio audit”

**M**ike Pappas, vice president of business development for Orban Labs Inc., will address the topic

“Why Worry About Your Air Chain?” on Sunday during the Broadcast Engineering & IT Conference.

Isn't the answer to the question obvious? Well, not always.

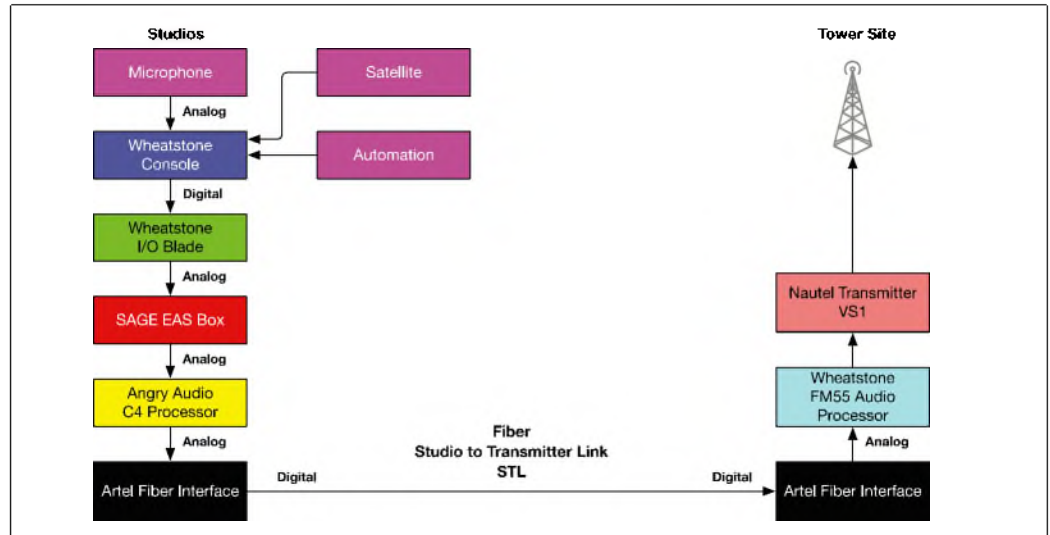
“We'll be talking about the importance of taking a critical listen to your air chain from microphone through to the transmitter,” Pappas said, “an ‘audio audit,’ as it were.”

He notes that engineers famously are overworked these days, doing everything from fixing leaks in the restroom to paper jams in the copier. But audio is the station's key product and most important asset.

Pappas will discuss what he has seen and learned during his many station visits.

“The number one problem is having insufficient AGC drive in the processors, followed closely by cascaded processors,” Pappas said. “This can create real problems in your audio, ranging from a muddy sound to way too much compression.”

But he has come across many other problems. He rattles them off: “Unnecessary multiple D to A to A to D conversions in the air chain. Improper gain staging/clipping. Poor board op training. Wiring phase reversals. Bad mic preamps. Wrong mic selection for the announcers/room acoustics. STL problems including interference,” he said.



**Above**  
A sample block diagram of an air chain.

**Left**  
Mike Pappas



“Also issues with the FM exciter or transmitters. Improper antenna and combiner tuning, which degrades analog FM performance. And, on the AM side, incorrect tuning of the phasor/tuners, with sufficient symmetrical bandwidth.”

Pappas says poor engineering practice can impair a station's performance on the Nielsen Portable People Meter.

“PPM encoding needs the cleanest, highest density audio to maximize ‘endcodeability,’” he said.

“If your air chain has problems, your PPM encoder isn't going to be doing the job it should. This could mean under-reporting of your actual listenership, which can ultimately

result in lower revenues for your station when you don't show up as well in the ratings.”

Any use of PPM “enhancers” should be judicious; if they're turned up too high you may generate objectional artifacts that clobber your TSL by driving your listeners away.

Pappas also recommends that you listen to every part of your air chain with a good set of closed-back headphones.

“Some things may not be working up to their potential — and you may find that some things aren't working at all. And don't forget the microphones.”

Because air chain problems come in all flavors. “I have found multiple compressor/limiters cascaded and hiding in closets, under bundles of cables and in telco closets,” Pappas said. “In one instance they were running a combined 40 dB of total compression! Needless to say, the station didn't sound good.

“And there was the AM transmitter site that was wired Pin 3 hot. And another that had the feed to the backup transmitter with the polarity reversed. And then there was the resident alligator at one AM site. They nicknamed him Nicodemus. ...”





## **Broadcast Software** INTERNATIONAL

**BSI RADIO AUTOMATION**  
**POWERFUL,**  
**AFFORDABLE**  
**& TRUSTED**

**EMPOWER YOUR STATION WITH  
BROADCAST SOFTWARE  
INTERNATIONAL'S MORE THAN  
20 YEARS OF EXPERIENCE IN  
RADIO AUTOMATION.**

**ITS TIME TO OPTIMIZE YOUR  
STATION WITH RADIO AUTOMATION  
SOFTWARE THAT IS AFFORDABLE,  
SCALABLE AND POWERFUL FOR A  
PROFESSIONAL SOUND. FOR MORE  
INFO CONTACT [SALES@BSIUSA.COM](mailto:SALES@BSIUSA.COM)  
OR CALL 888-274-8721**

**[BSIUSA.COM](http://BSIUSA.COM)**





# At Lotus, Natalie Marsh nourishes connections

“It is necessary in today’s environment to meet your listeners where they are”

**N**atalie Marsh is vice president and market manager for Lotus Broadcasting in Las Vegas. She is in her 25th year with the company. We asked her about business trends as the industry is getting ready for the NAB Show in her backyard.



compete with content creators. Audio remains the king, but it is necessary in today’s environment to meet your listeners where they are. It also requires creative compensation packages to help employees who are also battling the impact of rising costs. This can be as simple as flexible schedules and remote work when possible. These options help save commuting costs or allow for a work life balance that normally could create cost of living challenges.

**RW** What do you consider to be the most important issue for radio owners and executives right now?

**Natalie Marsh:** Radio has many of the same challenges many businesses face in a post-COVID world. We are all trying to navigate the impact of inflation. In my opinion this requires investing in updated technology, which can improve efficiency across the operation while optimizing ways to engage with your audience.

One example of this would be updating studio equipment to include cameras in the studio. Listeners and advertisers alike are looking for a 360-degree interaction. The appeal of radio has always been the connection to the local audience. You can increase that connection by adding a video option. It allows you to

**RW** What technologies or new media platforms are you watching closely, for their potential impact on how radio organizations do business?

**Marsh:** The biggest one I am watching currently is podcasting. It has been rapidly growing and it is such a complimentary platform for radio. We have some pretty popular podcasts for our sports stations that are simply on-demand options for listeners of the show. These are the simplest examples of how to turn current content into a new option for listeners.

From there you need to look at other options to explore. What passions do people in the building have that could engage an audience? You never know what gold mine exists in your team. We all have such diverse backgrounds, hobbies and likes.

It all circles back to connections. Finding topics that help you connect with the audience.

The other platform I am paying attention to is social audio. In sports radio, the social media platform of choice is X. I am highly intrigued by X Spaces with this audience. Sports hosts and listeners alike are very passionate about sharing their opinions in the sports space.

Other social audio apps have come into the market that I am watching for how they may align with some of our other formats. Clubhouse, Discord and Stereo are a few that I am paying attention to.

**RW** Generative artificial intelligence was a big buzz topic last year. Has it met expectations for its impact in radio?

**Marsh:** AI is not going away. Quite the opposite. It is growing at an almost frightening pace. My viewpoint on things like AI is leaning into how they can help you.

**BW BROADCAST IS BACK AND BETTER THAN EVER!**

Progressive Concepts is NOW the ONLY Factory Authorized USA Sales & Service Center for ALL BW Broadcast Products!

**Call us for this month's SPECIALS!**

**PROGRESSIVE CONCEPTS**  
305 S. BARTLETT RD. STREAMWOOD, IL 60107  
Email: sales@progressive-concepts.com  
Phone: 630.736.9822 Fax: 630.736.0353  
[WWW.PROGRESSIVE-CONCEPTS.COM](http://WWW.PROGRESSIVE-CONCEPTS.COM)



WEBDAD

**Automation has never  
been more powerful**

**Revolutionize your DAD workflow  
with WebDAD and AITrack**



**Breeze through spec  
ad creation with AI**



Again, I am going to focus on what I consider to be one of radio's biggest attributes: connection to the local audience. So we are looking at how AI can help us streamline content creation.

Can we use it to help us with more interactive features such as polls, quizzes or live chats? I am also looking at the abilities of AI to analyze listener behaviors and how we can utilize this to enhance their radio listening experience. We also want to figure out if there is an ethical way to use it to enhance engagement for our listeners without losing the human connection that is paramount to radio.

We are being very cautious in the AI world. You have already seen the backlash on some industries that might have jumped in too quickly.

### **RW** Over coming years, what will be the most important change in how radio is run?

**Marsh:** It feels like, now more than ever, it is hard to predict how technology may evolve.

I am aging myself here a little, but I sometimes think back to my childhood watching "The Jetsons" on Saturday mornings and I think "Wow, we are so close to that reality." I never imagined that we would be able to see the people we were talking to via phone on a video screen, but it is so commonplace now.

Radio has been ever evolving and I do not expect that

to change. Radio will expand its online presence and digital platforms. It will figure out how to use emerging technology to tailor content and enhance audience engagement.

So as an executive at a radio company, you have an obligation to stay on top of the trends and technology. It is so important to continue to understand and explore ways to engage your audience.

### **RW** Other thoughts? And what else should radio managers be thinking about as the spring show approaches?

**Marsh:** This year marks 25 years with Lotus for me. It is such an honor to work for the Kalmensons. They truly care about community and our partners, and they encourage that for all of their employees.

I have never failed to find the solutions to my challenges or some new emerging technology at the NAB Show. You have to keep an open mind in order to really grow and adapt. Growing up one of my favorite movies was "Ferris Bueller's Day Off." It was such a generationally iconic movie. It also has one of my favorite quotes: "Life moves pretty fast. If you don't stop and look around once in a while, you could miss it." He may be saying that to convince his friend to ditch school, but I like to use it as a reminder to not move so fast you miss the important things. **RW**



### **More Info**

Lotus

Communications Corp. owns 48 radio stations, a digital agency, low-power TV stations and e-commerce websites.

Established in 1962 by Howard A. Kalmenson, it is one of the largest privately owned radio groups in the United States.

## WITH OUR PROVEN WATER COLUMN TECHNOLOGY AND PROGRAMMABLE HEAT EXCHANGER, IT'S NO WONDER IT'S CALLED

# OptiLoad



Our new power load leverages the legendary performance of our proprietary water column cooling technology. It also features a built-in heat exchanger with state-of-the-art programming. So it delivers ultimate safety and efficiency for maintaining your transmission system. Plus, it's vertical orientation makes it easy to retrofit and upgrade your system in place.

**To order, or more information, contact your Dielectric sales rep.**

# Dielectric®

[Dielectric.com](http://Dielectric.com)



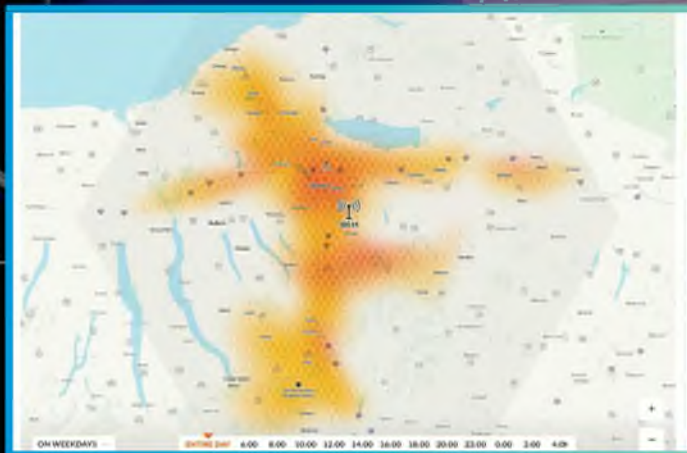
Schedule a demo  
with us at NAB'24  
[getconnected@dts.com](mailto:getconnected@dts.com)  
West Hall W3532

# Make your station the star of the dashboard.

Take control of your content, and partner with DTS AutoStage.



**DTS AutoStage Broadcaster Portal** > Gain access to unprecedented insights and listener behavior.



Learn More: [dts.com/autostage](https://dts.com/autostage)



# A sampler of BEITC radio sessions

AI will show up across the show, but there are other tech topics too

**T**he Broadcast Engineering & IT Conference of the NAB Show will take place Saturday April 13 through Tuesday April 16 in the West Hall.

Below is a sampler of talks of interest to radio, beyond those described elsewhere in this issue; but also be sure to review the full schedule on the NAB website; the conference includes others presentations about ATSC 3.0, generative AI in video, NAB's Broadcast Positioning System, media workflows and more topics.



Photo by Jim Peck

**Above**  
Hybrid radio platforms are likely to be in the news again this year. David Layer moderated a panel at last year's show with Jeff Detweiler, Nick Piggott and Laura Ivey.

## Saturday April 13

**10 a.m. BEITC Opening Session** — NAB Chief Technology Officer Sam Matheny hosts, with a welcome from President/CEO Curtis LeGeyt. The session includes a keynote by Dr. Hao Li, CEO and co-founder of Pinscreen, about AI lip sync technology, face swap, de-aging and the potential of AI technology.

**1:50 p.m. "Understanding Digital FM Asymmetric Operation"** — Alan Jurison of iHeartMedia discusses implications of the proposed rule change that would make it easier for FM HD Radio broadcasters to operate with asymmetric digital sidebands.

**2:10 p.m. "AM Carrier Power Reduction in All-Digital Service Mode MA3"** — Dave Kolesar of Hubbard Radio and Paul Peyla of Xperi talk about lessons learned at WWFD(AM).

## Sunday April 14

**1:30 p.m. "NABA: The Role of ITU in Broadcasting"** — Speakers include Rebecca Hanson, director-general of the North American Broadcasters Association.

**3 p.m. "Radio Visual Content Delivery - Metadata Management"** — A discussion of delivery opportunities on RDS/RBDS, HD Radio, DAB, streaming audio and hybrid radio platforms including RadioDNS and Xperi DTS AutoStage, given by Rich Redmond of Broadcast Electronics and the Elenos Group.

**3:20 p.m. "The Hierarchy of Latency: How to Cope for Remote Audio Operations"** — Greg Shay of Telos Alliance provides "a perspective of how to adapt to the remote time of flight for live audio workflows."

## Monday April 15


**10 a.m. "Modern Tools and Techniques to Maximize Your Broadcast Antenna Investment"** — This paper presents results of using a drone-based measurement system to verify actual antenna radiation patterns for diagnosis and comparison to the intended design for the TV and radio industry. It's given by Jason Schreiber of Sixarms.

**10:20 a.m. "An Innovative In-Service Antenna Monitoring System to Protect Your Antenna and Transmission Line"** — Anton Lindner of Spinner on the methodology and benefits of the company's Antenna Monitoring System, which now includes Distance to Fault (DtF) analysis.

**1:30 p.m. "SBE Broadcast Technology Update"** — Presenters review a variety of advanced technology solutions, including ATSC 3.0 and AI.

## Tuesday April 16

**10 a.m. "Building DC's Largest Community Antenna System"** — WAMU(FM) partnered with rival WTOP to build a state-of-the-air master FM antenna system to support their operations as well as other tenants. Speakers include engineers Rob Bertrand and Dave Garner as well as representatives of ERI.

**3 p.m. "Content Credentials - New Requirements for Media Provenance Labels for Gen AI Content"** — The Coalition for Content Provenance and Authenticity has developed a broadly adopted standard for maintaining secure provenance labeling as media flows through production processes where elements of AI will be used to enhance and augment content. This panel will be a progress report. 

# OXYGEN 3000 PLUS | Digital Broadcast Consoles



## >> Much more than a Digital Broadcast Mixer!

A full range of powerful features for Radio On-Air and Production available in 3 different formats and flexible configurations: 8, 12 and 16 faders with 1 or 2 Audio I/O Boards and 16+16 or 32+32 Dante™ I/O. Oxygen 3000 Plus is the best-equipped console of its category: Low Latency, Users Preset, Smart Keys, EQ, Compressors, Telephone Hybrid, HDMI Output,

Analogue and Digital I/O, USB, Bluetooth, Dante™ AoIP, Telco, Presenter Talk Box, Streaming In/Out.

Oxygen Remoter Software, which enables up to 8 additional virtual faders for a full I/O control is available on Oxygen 3000 Plus as it is, for free, in any Oxygen Digital Console model.







Photo by Pierre-Philippe Marcou/AFP via Getty Images

Writer



# Now can I forget about cybersecurity?

You know the answer. But have you taken these steps yourself?

40

Wayne M. Pecena

CPBE, 8-VSB, AMD, ATSC3, DRB, CBNE

Member, SBE Education Committee

Above

An employee of IT company Atos is pictured at the company's cybersecurity center for the 2024 Olympic Games in Madrid.

On Tuesday April 16 at the NAB Show, Wayne Pecena will give a talk about "Broadcast Cybersecurity Precautions & Verification" as part of the Broadcast Engineering & IT Conference.

After completing my due diligence regarding cybersecurity in my broadcast operation, I accepted that cybersecurity is a reality, whether at a small radio station or a state-of-the-art major-market station.

The migration to an information technology-based Internet Protocol network infrastructure has brought advantages to my station in system capability, flexibility, scalability and cost-effectiveness. But I realize that these advantages created exposure to potential

cyberattacks and that protecting my infrastructure grows more challenging each year. I accept that cybersecurity is an essential responsibility of my role as a broadcast engineer and cannot be ignored.

I invested time in studying and I understand that cybersecurity can be a complex undertaking, as well as confusing and challenging.

My resources include the National Institute of Standards and Technology, the Cybersecurity Infrastructure Security Agency and the industry at large.

The NIST Cybersecurity Framework available at [www.nist.gov](http://www.nist.gov) provides a structured set of guidelines and best practices for protecting IT assets and mitigating cybersecurity risks.

The framework is organized into the five areas of Identify, Protect, Detect, Respond and Recover. These areas are further divided into several categories and sub-categories before reaching a specific guideline or best practice, along with a discussion of its significance.

CISA ([www.cisa.gov](http://www.cisa.gov)) offers a range of resources, from tutorials and best-practice checklists to the industry-recognized Known Exploitable Vulnerabilities of cyberthreats, or KEV. I found it beneficial in establishing a risk-based approach to prioritize my time and deployment of resources.

**RAM SYSTEMS**

Building Sound Broadcast Furniture for over 50 years

RADIO—TV—DIGITAL

WWW.RAM68.COM

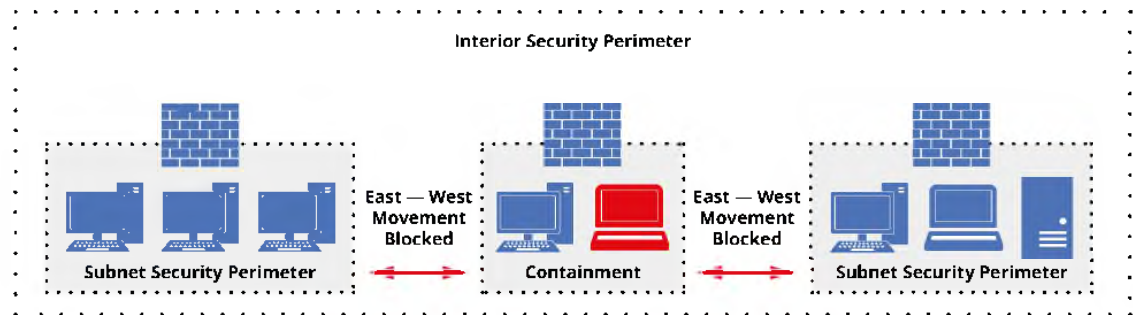
## Core principles

During my course of study, I realized that cybersecurity is founded on certain core principles. Several of these form the guidelines and best practices that reduce risks and protect my assets.

The principle of Defense in Depth, or DiD, establishes redundant levels or layers of security controls within the IT infrastructure, such that I have no single reliance upon a single cyber precaution. If a precaution is breached or fails, another will prevent further impact.

A critical aspect of DiD implementation is to have the proper network architecture. A layered or segmented network is essential. The segmented network is a traditional "flat" network compartmentalized by dividing into smaller sub-networks or subnets, each of which can have the appropriate security controls applied that fit the workflows occurring within that subnet.

I enhance security by minimizing the attack plane, providing containment if a cyber breach should occur by minimizing movement throughout the overall network. Movement throughout the network or "east-west" is a



common goal of virus and ransomware malware. Network performance enhancement may result, as the reach of network service broadcasts are limited.

With a segmented network infrastructure in place, I can implement further DiD steps. These include physical infrastructure security and managed Ethernet switch security features, such as port security and packet filtering to control access.

Packet filtering is accomplished by basic Access Control List (ACL) stateless filtering of stateful filtering through a firewall. In certain situations, I may use both types of packet filtering. I can implement further security controls for encryption provided by IP Security (IPsec), Transport Layer Security (TLS) or Secure Shell (SSH). I should use encryption

**Above**  
Network segmentation contains threat migration throughout the network infrastructure.

# EAS Insertion Made Easy



## MSRP-3

### Three Station Analog EAS Relay

The MSRP-3 is a three station analog stereo EAS relay/switcher following in the footsteps of the original Multi-Station Relay Panel (MSRP) designed by Broadcast Tools for the Sage ENDEC in 1996. The MSRP-3 provides additional alert audio distribution and transparent audio interrupt switching for the Sage ENDEC. Together with the single balanced stereo switched audio interrupt relay built into the ENDEC, an ENDEC and MSRP-3 will provide interrupt switching for four stereo audio paths. Each alert insertion can occur simultaneously on one or more station outputs, but alerts can not be overlapped.

Standard pinout RJ45 station audio input and output jacks make installation with Cat5 or Cat6 patch cables plug and play. The encoder audio input is an unbalanced monaural RCA jack, eliminating the need for external level conversion. Control via RS-232 serial port (or optional TCP/UDP Ethernet port), or contact closure inputs. Includes SPST test and station relay outputs.



Broadcast Tools is a Veteran Owned Business  
Designed, Assembled and Supported  
in WA State, USA.  
[www.broadcasttools.com](http://www.broadcasttools.com)



**BROADCAST**  
*t o o l s*  
PROBLEM SOLVED





and Multi-Factor Authentication (MFA) for any remote access via a public network or the internet. I use a Virtual Private Network (VPN) to access my broadcast network remotely via the internet.

The principle of Least Privilege (PoLP) — often referred to as “deny by default” — is based upon limiting access rights to users and applications to the minimum level required to perform the defined business function. Limiting access to IT assets reduces the risk of abuse and propagation of a threat via “east-west” movement throughout my IT system.

Finally, the “CIA triad” is the core objective of IT security. It establishes the goals of insuring Confidentiality, Integrity and Availability of IT systems.

*Confidentiality* refers to the data within the IT infrastructure that is available only to authorized users and systems, whether flowing through networks, stored at rest or within a workflow process. *Integrity* refers to ensuring that data has not been modified, tampered with or altered. *Availability* ensures IT resources are available to authorized users and applications.

## 18 actions

From the knowledge and recommendations I gained, I developed and executed my structured cybersecurity plan based upon my specific environment. I did the following:

1. Accepted there is no single cybersecurity solution
2. Used DiD to provide redundant precaution implemented in a structured and coordinated manner
3. Implemented a segmented network for cybersecurity protection and performance enhancement
4. Inventoried my IT assets and used a risk-based approach to establish priorities
5. Established physical infrastructure security measures
6. Utilized Ethernet switch port security
7. Used stateful and stateless packet filtering to control and limit resource access
8. Applied PoLP to users and applications
9. Used encryption & Multifactor Authentication (MFA) for any remote access
10. Kept my network hardware and operating systems updated and current
11. Changed default logins to strong & unique credentials
12. Deleted stale accounts
13. Disabled any host services not required or used
14. Used packet filtering to block any service port if not able to be disabled
15. Performed routine vulnerability and malware scans with current signature files
16. Maintained critical system backups that followed the 3-2-1 rule: Have three copies of critical data, on two different types of media and one offline



## Learn More

A free SBE webinar includes discussion of principles described here. Find it at <https://sbe.org/education/webinars-by-sbe/cybersecurity-2023/>

Come see us at  
NAB booth W1731

# PEAK VOCAL PERFORMANCE FOR THE SOFT AND THE VOCIFEROUS

Half-width, single-channel device shown in optional twin rackmount. Single rackmount available.

Connect with your Wheatstone sales engineer for all your WheatNet-IP AoIP network needs!  
Call +1-252-638-7000 or email [sales@wheatstone.com](mailto:sales@wheatstone.com)

<https://wheatstone.com/voice-1-vociferous-rw2024d>

17. Routinely test backup systems for operability and reliability
18. Established infrastructure monitoring and alerting to identify when abnormalities occur

With my cybersecurity precautions in place, I also use the tools that a malicious hacker or threat actor might employ. I want to verify that precautions I think are in place are functioning as intended. And I check again after updates are performed, because device configurations might be changed to defaults.

The basic tool used for penetration testing is a port scanner such as "nmap" ([www.nmap.org](http://www.nmap.org)). A port scanner identifies host devices visible on a network and determines services enabled by active port identification. I find online port scanning tools such as Shodan ([www.shodan.io](http://www.shodan.io)) useful for quick routine checks of my public network viability.

Penetration or "pen" testing is the last step in my cybersecurity prevention plan, in which I view as my "proof of performance" of the broadcast IT system.

With a solid prevention plan in place, perhaps I should be able to forget about cybersecurity. But while I may have adequate technology-based precautions in place, ransomware delivered through social engineering tactics remains the greatest threat faced today.

NIST defines social engineering as tricking someone to reveal information or grant access by manipulation of human emotion. Social engineering is often based on manipulation of emotions with a sense of urgency to exploit a victim's lack of knowledge, fear or curiosity.

Phishing is the most common tactic, ranging from mass user audience attempts to focused or targeted users. Attackers often use personal information to establish a relationship of trust with the targeted victim. They may learn information or trick the victim into downloading malware by using voice phone calls, SMS messaging, email and even postal service mail.

So, educating my users about the dangers of social engineering tactics is critical. And the Cyber Division of the FBI recently raised awareness of dual threats — successive ransomware attacks affecting an organization days apart.

Ransomware delivered through social engineering is a rapidly evolving area of cybersecurity shown to be effective and worthy of a future article.

Virtually all broadcast stations rely on an IT-based IP network infrastructure. The reality is that I can never forget about cybersecurity. I might rest better at night knowing that my cybersecurity plan is in place. But I remind myself that cybersecurity evolves constantly and that my protections must do so as well.

*The author is past president of the Society of Broadcast Engineers and a member of its Certification and Education Committees. He is associate director, information technology at Texas A&M University – KAMU(TV/FM) and a past recipient of the Radio World Excellence in Engineering Award.*

**Digital or Analog... We've got the gear you need!**

Henry Engineering logo

- ✓ Audio & AES interface, switching, distribution
- ✓ Sports broadcasting, headphone amps
- ✓ Logic, tally, & power control

**SPORTS POD**  
MIC ON, COUGH, TALK BACK, HEADPHONE LOGAL RETURN

**MADE IN USA**

**We Build Solutions...for 42 years!**  
[www.henryeng.com](http://www.henryeng.com) (562) 493-3589

**New high power, high gain antenna from Bext**

**Performance, Customer Service and Sturdiness is what customers like about Bext antennas**

**TFLHOP**  
Horizontally Polarized  
Up to 60 kW power handling

**bext.com**      **888 239 8462**      **BEXT**

**Sonshine Weather**

**Christian Station?**

**SonshineWeather.com**  
**919-363-5399**

Affordable Weather For Christian Radio Stations

**AMergency!**

**We stock AM Radio components for temporary and full time applications.**

- Transmitters
- Antennas
- Prefab Groundplanes
- Engineering
- Accessories
- Rentals

**Any frequency. Anytime.**

**theRADIOsource.com**



# BROADCAST EQUIPMENT EXCHANGE



**ECONCO**

**Rebuilt Power Tubes  
1/2 the cost of New!**

Se Habla Español

# ECONCO

Se Habla Español

Tel: 800-532-6626 Web: [www.econco.com](http://www.econco.com)  
Intl +1-530-662-7553 Fax: +1-530-666-7760



**ECONCO**

44



Keeping you on the  
air since 1934

ISO 9001 Certified

## NEW POWER TUBES

Triodes  
Tetrodes  
Pentodes

NEW SOCKETS &  
REPLACEMENT PARTS

Worldwide Availability

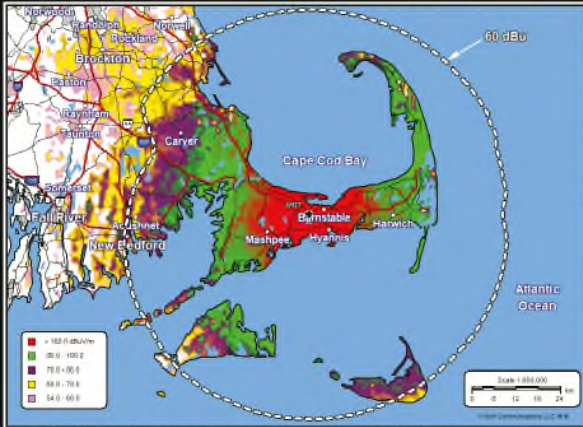
Made in the U.S.A.

Call (800) 414-8823  
Int'l (650) 846-2800  
Fax (650) 856-0705

Visit our Website at  
[www.cpii.com/eimac](http://www.cpii.com/eimac)



## Professional Broadcast Engineering Software



- Create stunning "real-world" coverage maps, interference studies, and population reports with Probe 5™
- Find STL broadcast auxiliary and Part 101 microwave frequencies and generate PCN letters with Microwave Pro™
- AM Pro 2™, used daily by FCC engineers, performs skywave and groundwave allocation studies and AM coverage mapping
- Map FM stations and discover upgrade possibilities using FCC minimum separations and contour-to-contour methods with FMCommander™

Probe 5™ Longley-Rice coverage map with FCC's style 60 dBu coverage contour.

[www.V-Soft.com](http://www.V-Soft.com) **V-Soft Communications®** (800) 743-3684

See us at NAB Booth W3147

**VSoft COMMUNICATIONS®**  
R.F. Communications Software and Engineering Consulting

# Oldies Music for Radio

**RadioMusic.com**  
**1-844-RADIO-MUSIC**  
*A Scott Studios Company*

**CORNELL-DUBILIER MICA CAPACITORS**

---

FROM STOCK

---

**VACUUM CAPACITORS**

---

FROM STOCK

---

**HIGH ENERGY CERAMIC CAPACITORS**

**SURCOM ASSOCIATES**

5674 El Camino Real, Suite K  
Carlsbad, California 92008  
(760) 438-4420 e-mail: [ink@surcom.com](mailto:ink@surcom.com)  
[WWW.SURCOM.COM](http://WWW.SURCOM.COM)



**What are you waiting for?**

Get your message across with an ad in radio's industry leading publication.

**RADIOWORLD**

For more information contact John Casey at 1-845-678-3839 or email [john.casey@futurenet.com](mailto:john.casey@futurenet.com)



Writer



**Joe D'Angelo**  
Senior Vice President, Broadcast and Digital Audio, Xperi

# In-vehicle gaming is an essential opportunity

It presents a major opportunity for radio to engage audiences

**T**his year at CES, Xperi announced the development of a prototype feature we've been working on for our DTS AutoStage entertainment platform: in-vehicle gaming. This is a completely natural progression for the platform, as connectivity, interactivity, voice interaction and personalization continue to converge in the vehicle cabin, setting the stage for a new and better entertainment user experience incorporating music, video and, now, gaming.

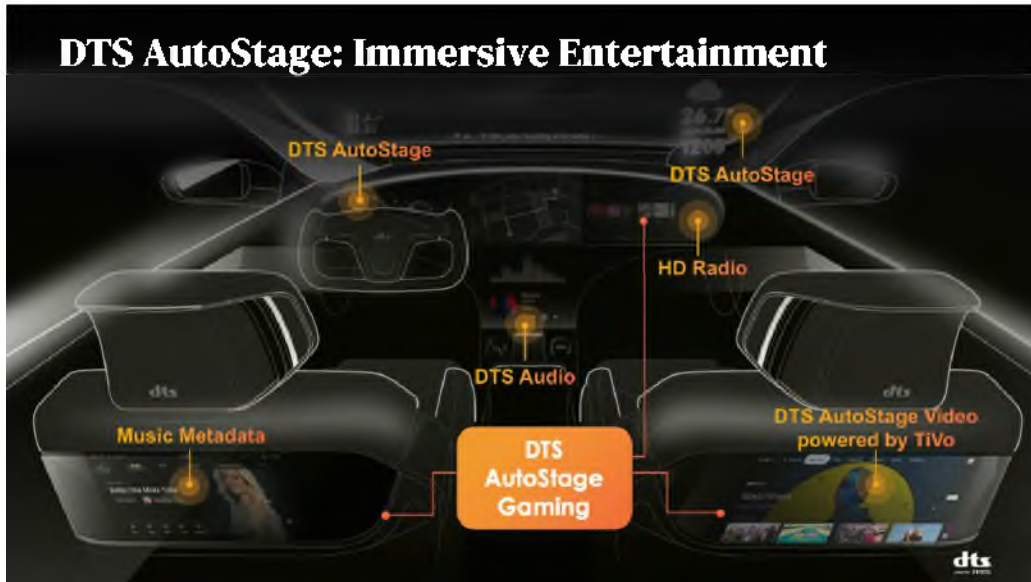
In-vehicle gaming and car radio are inextricably intertwined in this progression, which is why we see gaming as an essential opportunity for radio broadcasters.

There really is nothing new about games in the car, the innovation is in the execution. After all, playing games on long (and short) car trips has been around as long as the car (and the car radio), keeping driver and passengers alert and entertained, well before innovations such as the Walkman, CD players, iPods, iPhones or today's in-cabin media platforms offered entertainment on-the-go.

Most of us have probably played word and observation games such as "I Spy" or "Spot the License Plate" in the car to pass the time, or enjoyed games served up on car radios such as "Wait Wait ... Don't Tell Me," "Say You" or local and sports trivia and "name that tune" games on local stations.

Games are, in fact, part of the DNA of radio.





With this in mind, Xperi and DTS are developing a new gaming capability designed to keep broadcasters involved, and radio front, center and relevant, to the in-cabin experience.

Of the three categories of gaming emerging for integration in new cars — Driving Games, Passenger/Rear Seat Entertainment Games and Console Games — we are initially focused on audio driving games, those designed around content using an audio interface that is safe for drivers to play and that, in many ways, reflects the success of the earliest games played in-vehicle, but with all the benefits of DTS AutoStage's global platform.

### Above

Gaming is another element in the DTS AutoStage ecosystem.

### Radio's heritage

If you go back to the origins of radio programming in the 1920s, '30s, '40s and '50s, much of the content consisted of quiz game shows that tickled the mind, starting in 1923 with radio's first quiz show, "Brooklyn Eagle Quiz on Current Events," and the 1930s' "Information Please" and "Dr. IQ."

Today, gaming of every kind is ubiquitous across media channels and on the upswing. According to IDC, Gen Z spends 14.9 hours a week with digital gaming on average, while consumers overall spend an average of 9.4 hours, with the hours spent on gaming by younger millennials, older millennials and Gen X expected to rise in the next year.

Meanwhile, rapid innovation in the in-dash entertainment landscape means that, although radio continues to be the most listened-to media in the vehicle, new digital alternatives loom, enabled by the explosion in cellular IP networks and capacity, putting radio's dominance in jeopardy. In-cabin innovation is reflecting this, with gaming already launched in Tesla, Mercedes and BMW.

So it is increasingly critical that broadcasters stay several steps ahead of this curve and, given the success that radio historically has had with games, the category presents a major opportunity to engage audiences.

### Big opportunity

We believe this will translate well into our in-cabin platform, providing major opportunities for broadcasters to create new game content relevant to their particular music genre, or their specific information focus, that can run alongside broadcast radio shows — just as enriched metadata is already enhancing, reinforcing and making broadcast content more immersive.

For example, a "Name That Tune," or "Guess That Lyric" game could run alongside musical programming or a series of games that incorporate local, regional and national trivia and sports quizzes can be generated, all of which can help stations extend their brand and increase stickiness. And, because of the personalization of the DTS AutoStage platform, entering a contest or game could be hands-free and automatic, making it deeply user-friendly.

As we develop our new gaming functionality, we are looking at multiple use cases, from a way to kill time while an EV vehicle is stopped and charging, to waiting in line to pick up kids from school or, like those old school in-vehicle games of "I Spy" or "Spot the License Plate," a way to keep the driver's mind alert and stimulated, and bored passengers engaged. Of course, as vehicle automation and advanced driver-assistance systems advance, the technological sophistication of these games has the potential to advance.

But, in the end, a game is a game, simple or complex, and the human instinct to play, to test the brain, to know the answer to a piece of trivia, to name a tune, or to fill in a missing letter in a word is a core form of entertainment, one that is poised to provide exciting and almost limitless possibilities for the future in-cabin entertainment — a future in which radio will, and must, play a central role. 🎮

**“ In-vehicle gaming and car radio are inextricably intertwined in this progression. ”**



**AM, FM & DAB+ Audio Processors**

# **OPTIMOD 5950 - OPTIMOD 5750 OPTIMOD Trio**

**Window-Gated AGC - Five-Band and Two-Band Processing**

**Loudness Control - AES67/SMPTE ST-2110/DANTE**

**HTML5 Web Control - Watermarking Encoders - RDS Encoder**



**NABSHOW**  
Where Content Comes to Life

Visit us at booth  
W3443 West Hall







Come see us at  
NAB booth W1731

# UNLEASH YOUR *ROAR*



Shown in optional twin rackmount. Single rackmount available.

## LION FM/HD AUDIO PROCESSOR

This cool cat has big processing chops and a small footprint.  
Get more roar without taking a big bite out of your wallet.

**Connect with your Wheatstone sales engineer and make your signal ROAR!**  
Call +1-252-638-7000 or email [sales@wheatstone.com](mailto:sales@wheatstone.com)

<https://wheatstone.com/unleash-your-roar-rw24d>